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ABSTRACT

Life Cycle is one of the units of a K-6 unified science curriculum program. The unit consists of four organizing sub-themes: (1) past life (focusing on dinosaurs and fossil formation, types, and importance); (2) animal life (examining groups of invertebrates and vertebrates, cells, reproduction, and classification systems); (3) plant life (investigating plant characteristics, values, growth patterns, and the process of photosynthesis); and (4) human biology (with activities on the senses, body systems, and disease). Each sub-theme contains an introductory statement, student activities for lower primary grades (K-3) and upper primary grades (4-6), and a teacher's copy for each student worksheet. Student worksheets are ready for duplicating. (ML)

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LIFE CYCLE

PAST LIFE

Dinosaurs fascinate little children. It is this interest that can develop into an understanding of the fossils and how they become fossils. Students should become familiar with other types of fossils in this unit, so they can understand why fossils are important in assigning an age to the rocks that fossils are found in. Organisms evolve or change through time, and it is these changes that give us clues to how old the rock is. Organisms can also give us clues about the conditions of the rock when it was deposited. This helps us to interpret what the earth use to look like to help find oil and minerals. Organisms that possess hard part will fossilize more readily than those without. The fossil record is incomplete because not all organisms fossilize.

LOWER PRIMARY

A. WHAT ARE DINOSAURS? - Description of various dinosaurs. Did "cavemen" live with dinosaurs? Where did the various dinosaurs live? What did dinosaurs eat? What are the different types of dinosaurs?

B. BONE FOSSILS - What does a chicken bone and a steak bone have in common? Are bones different than other fossils? What animals have bones? Are bones easy to find in the fossil record?

C. FOSSILS WITHOUT BACKBONES - What happens when a clam gets stuck in the mud? How can a shell be preserved? What is left when a worm, a clam, a bug, a crab and a jellyfish die?

UPPER PRIMARY

D. OTHER FOSSILS - Do plants get preserved? Do mushrooms get preserved? Do insects get preserved? Do microscopic animals get preserved? What kind of rocks would you find these in? What is petrified wood?

E. HOW ARE FOSSILS PRESERVED? - What parts of an organism gets preserved? What environments preserve the hard parts better? Can you make a fossil? Will you become a fossil?

F. WHY ARE FOSSILS IMPORTANT? - What organisms produce oil? Can fossils tell us anything about the history of the earth? In what industries are fossils important? Can fossils tell us about past environments on earth?

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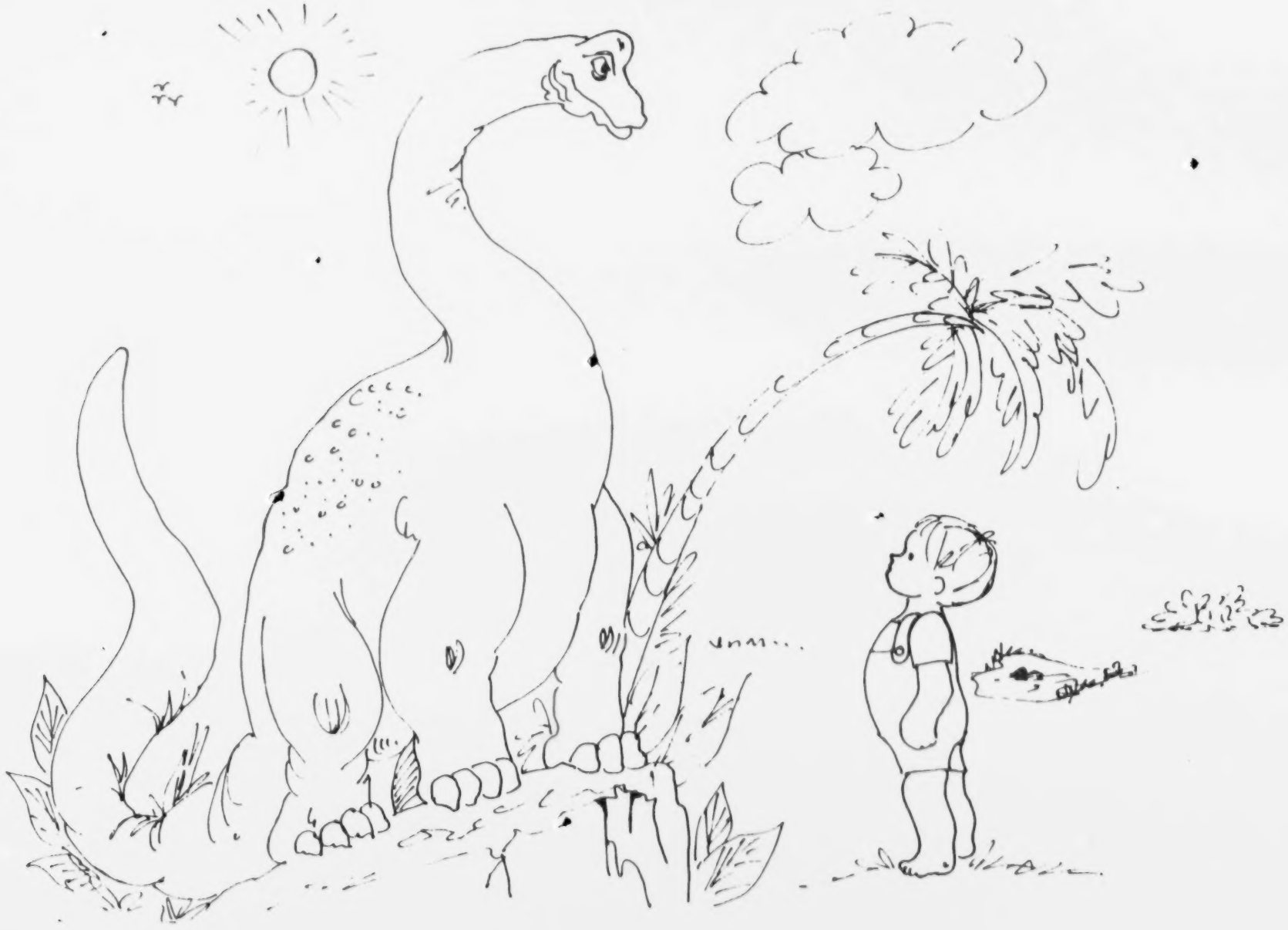
Teacher Sheet

After the students color this scene, ask the children what doesn't belong here. There is 2 ways the children can answer - take the dinosaur away and everything else can stay. If the children keep the dinosaur then all things with an x should not be there.

5 What doesn't belong in this picture?

name _____



MAKING DINOSAUR TRACKS

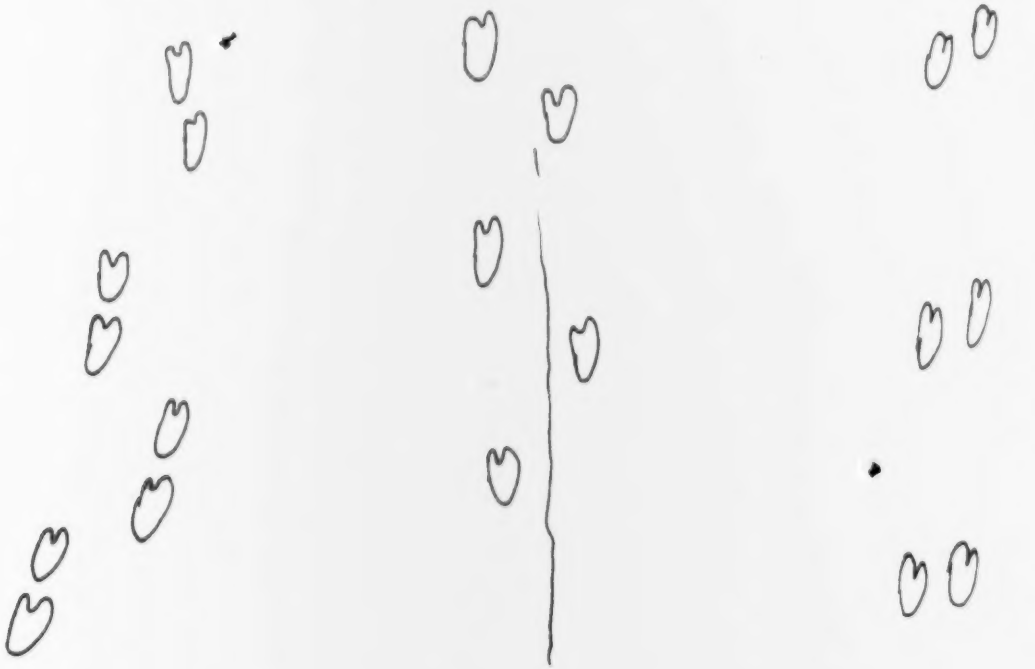
MATERIALS: Dark butcher paper
Talcum powder

ACTIVITY : Have children make believe they are dinosaurs. Have them make food prints on the butcher paper or outside on the school grounds. Have them walk, run and jump like they think dinosaurs did.

QUESTIONS TO ASK: Do the tracks look different when you walk or run? How do they differ? Can you tell if an animal lived on 2 legs or 4 legs. Is the dinosaur pigeon toed or did it walk like a duck?

CONCEPTS TO BE LEARNED: Tracks of dinosaurs can tell us how big the organism is. You can tell if a dinosaur was walking or running. You can tell whether the dinosaur walked on two legs or four.

ALTERNATE ACTIVITES: You can have the children make potato feet, and have them print on a piece of paper what the tracks of a dinosaur look like.



4 legged dinosaur walking

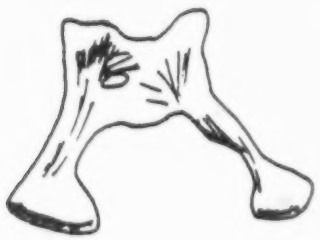
2 legged dinosaur with tail

4 legged dinosaur running

HOW CAN YOU RECOGNIZE A BONE?

Materials: chicken bone and steak bone

Activity: Have the children draw the two. Emphasize to them that there is something that they both have in common. After they have discovered that there is holes on the inside of the bone, you can explain that this is for the blood vessels to nourish the bone when it was alive.



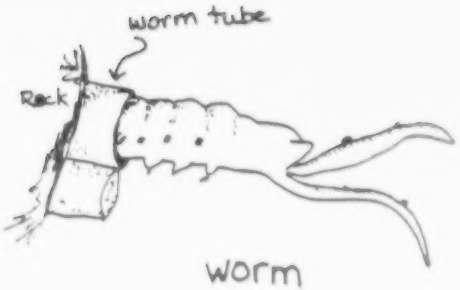
points for children to observe:

cross section of bone:
contains many holes

outside of bone: smooth, long
tiny lines

name teacher sheet

Below are animals without backbones. State what will be preserved?

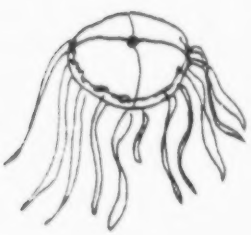


worm

the worm lives in the ocean; the worm tube will be preserved

snail

the snail will leave its shell when it dies

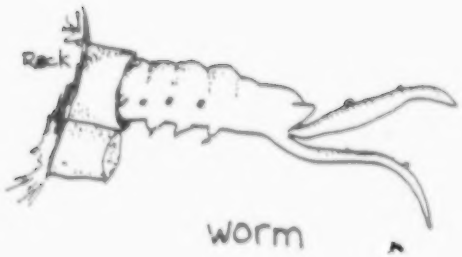


jellyfish

the jellyfish will leave nothing when it dies

name _____

Below are animals without backbones. State what will be preserved?

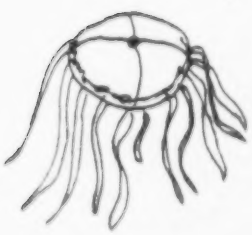


worm

_____
_____
_____
_____

snail

_____
_____
_____
_____

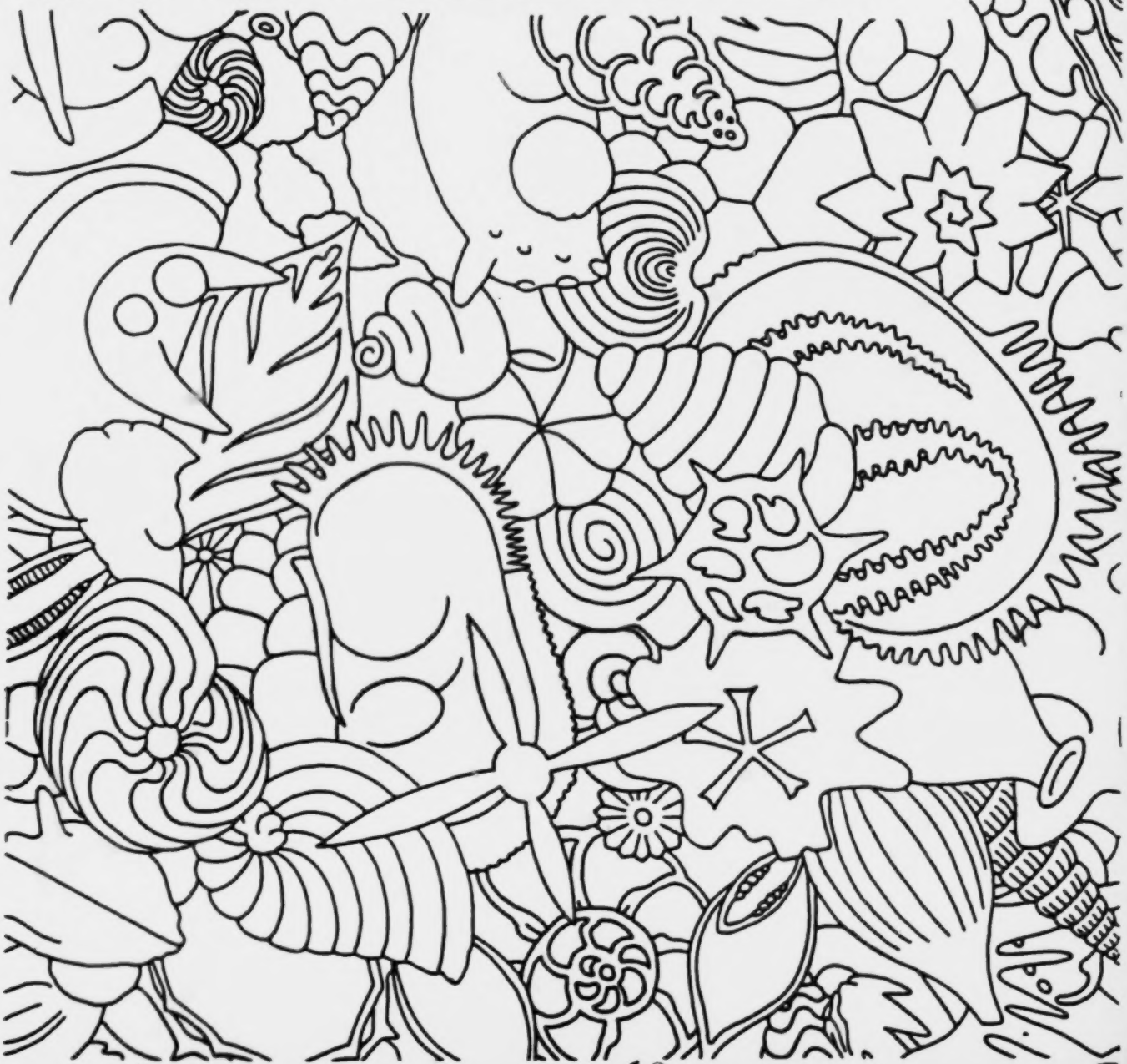


jellyfish

_____
_____
_____
_____

name_____

A piece of rocks was cleaned and then looked under the microscope. Below is what can be seen. These are fossil that represent organisms that lived in the sea. How many shapes can you identify? Color the same shape the same color. The type of organisms include: Foraminifera, ostrocodes and silicoflagellates. FORAMININFERA are one celled protozoa. These little critters live in the ocean, when they die their skeleton falls to the bottom of the ocean floor and becomes part of the rock that will form. These organisms are no bigger than the diameter of one of your eyelashes. OSTROCODES are related to shrimp, except they are much smaller and have an outside shell. The ostrocodes are bigger than the foraminifera. SILICOFLAGELLATES are one celled plant that live in the top waters of the oceans. They are the smallest and least complicated compared to the foramininifera and ostrocodes.



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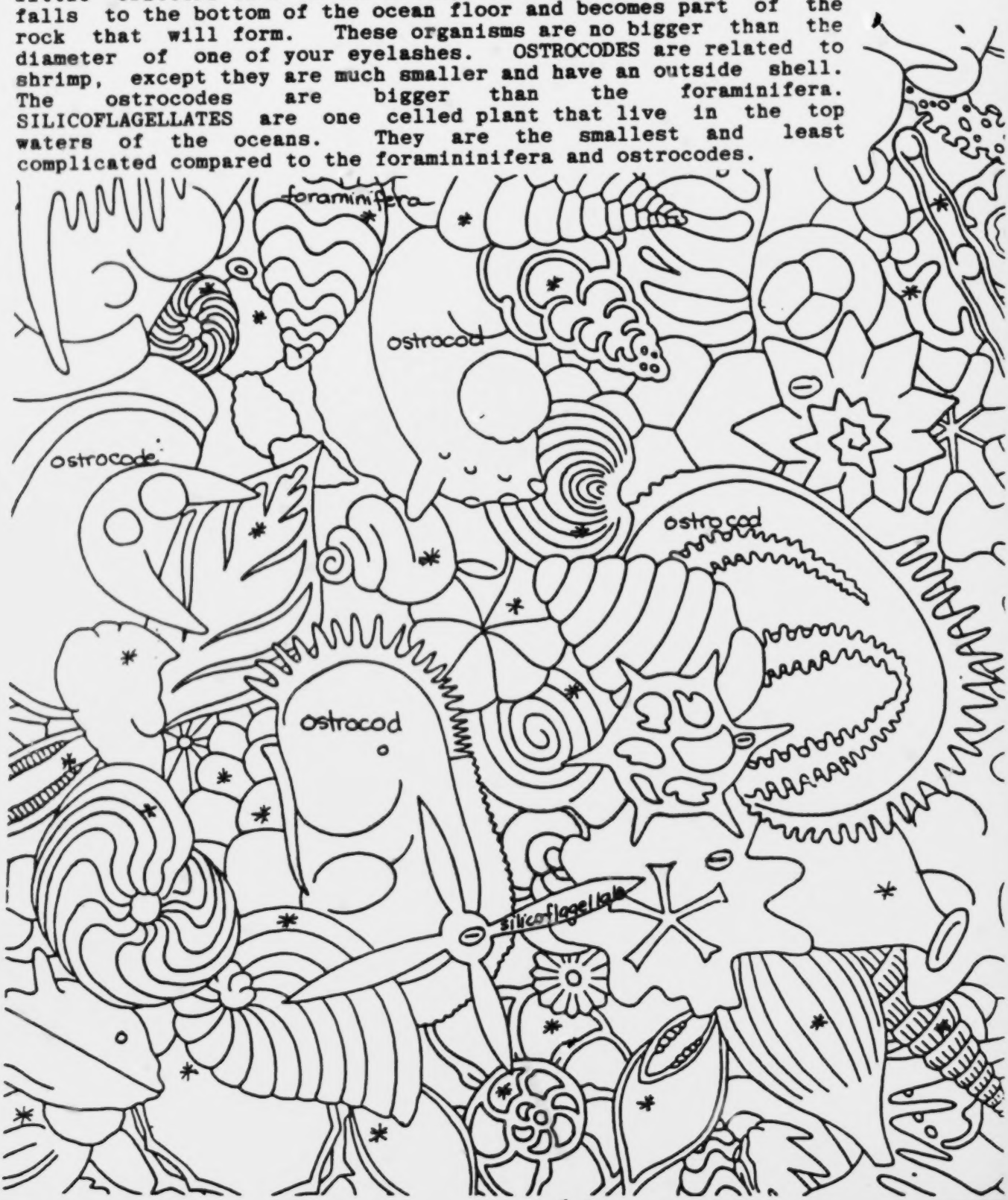
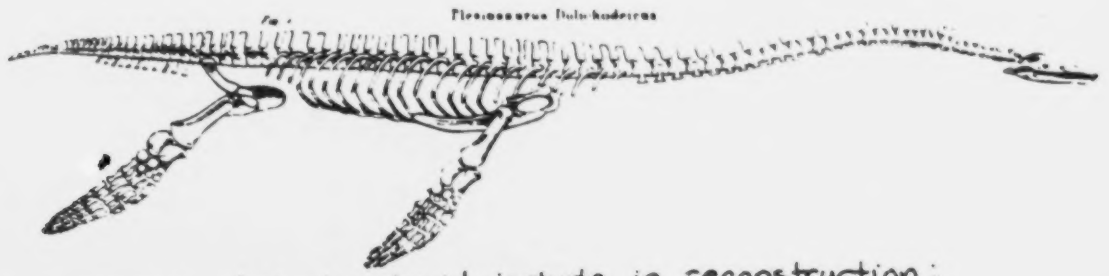


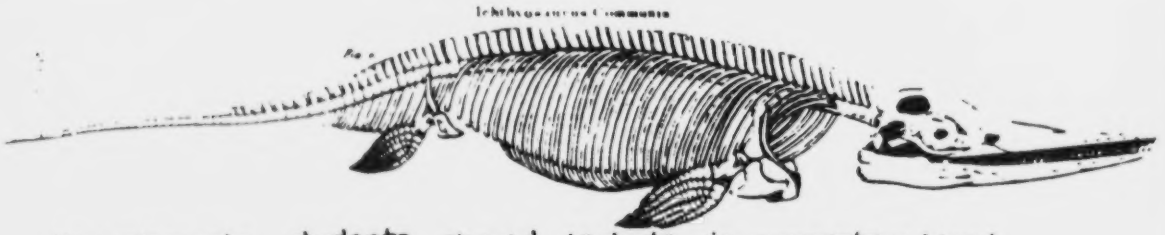
name teacher sheet

Can you guess what kind of animal this used to be? Draw a picture of what you think it looked like when alive? (Did it have feathers, skin, fur? Was it red, yellow or green?)



Key elements students should include in reconstruction:

- small head
- long, thin neck
- feet that look like fins
- snake like tail
- some indication that this organism lived in the sea

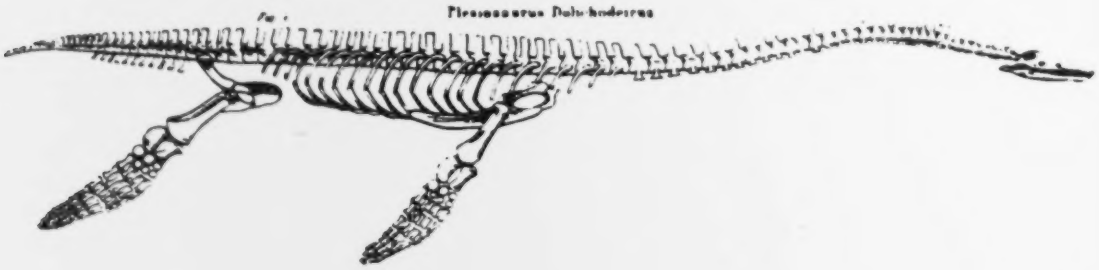


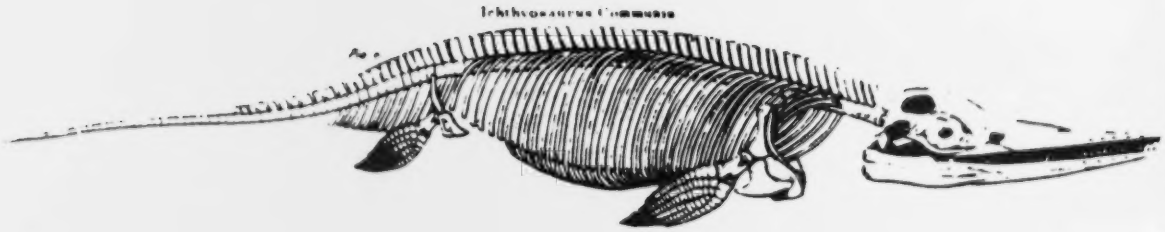
Key elements students should include in reconstruction:

- large head
- short, neck
- short, fin-like feet
- long, snake-like tail
- some indication that this organism lived in the sea

name _____

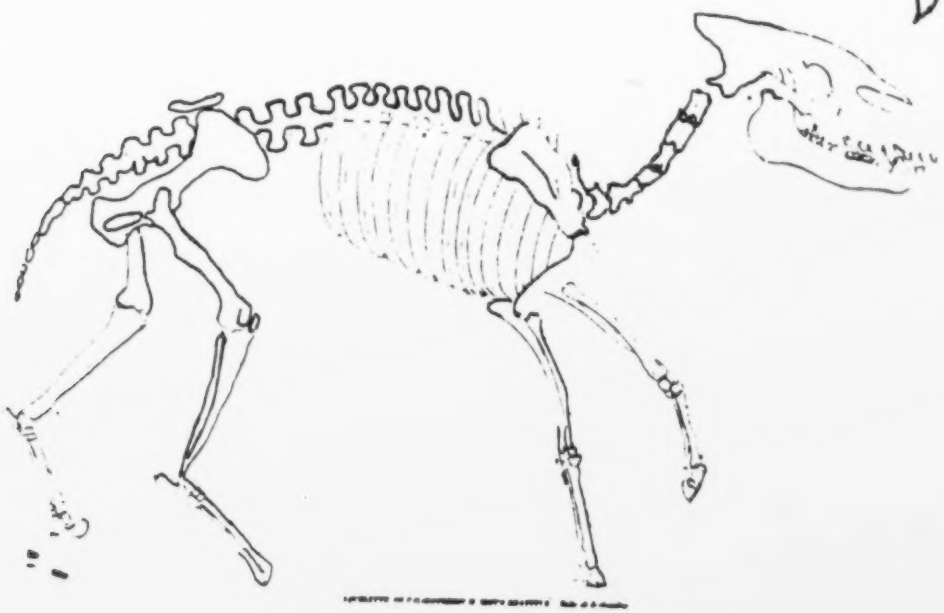
Can you guess what kind of animal this used to be? Draw a picture of what you think it looked like when alive? (Did it have feathers, skin, fur? Was it red, yellow or green?)





name teacher sheet

What did I look like when I was alive

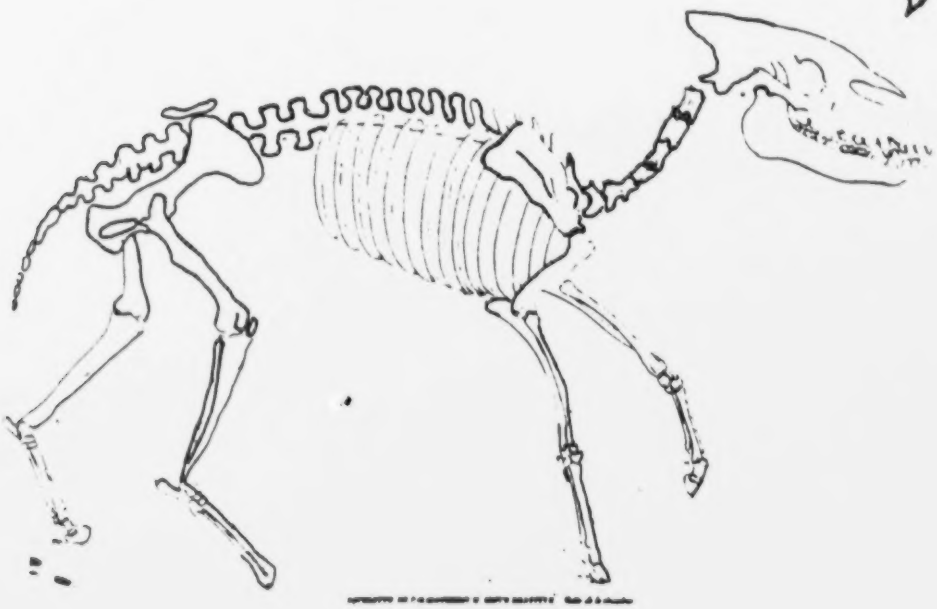


Key elements

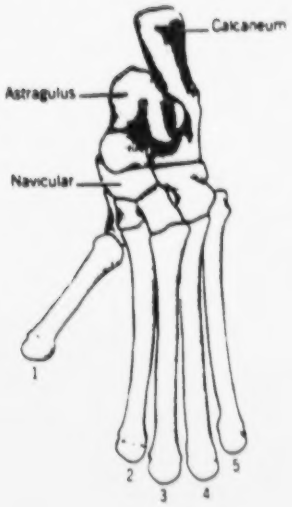
- hoofs as feet
- mammal like
- skin
- probably fur
- elongated head
- short tail

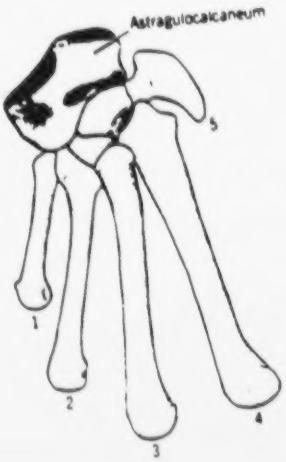
name _____

What did I look like when I was alive

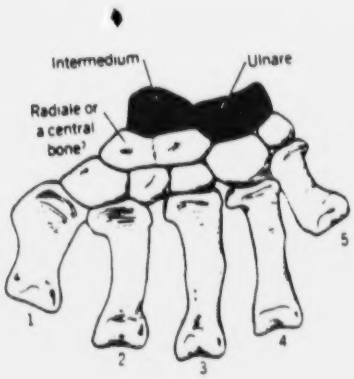


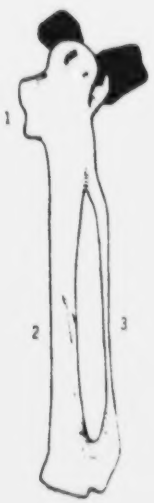
name _____





_____ _____ _____





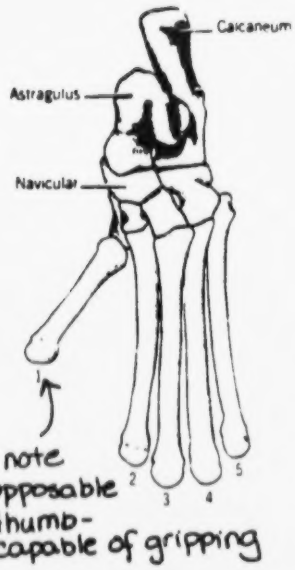
_____ _____

Whose foot do these bones belong to?

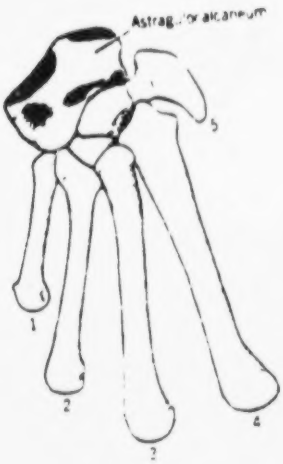
turtle, pelican, rhinoceros, lizard, monkey

name teacher sheet

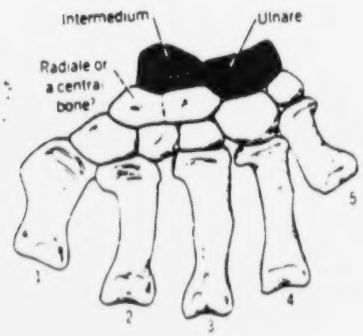
rhinoceros



monkey



lizard



turtle

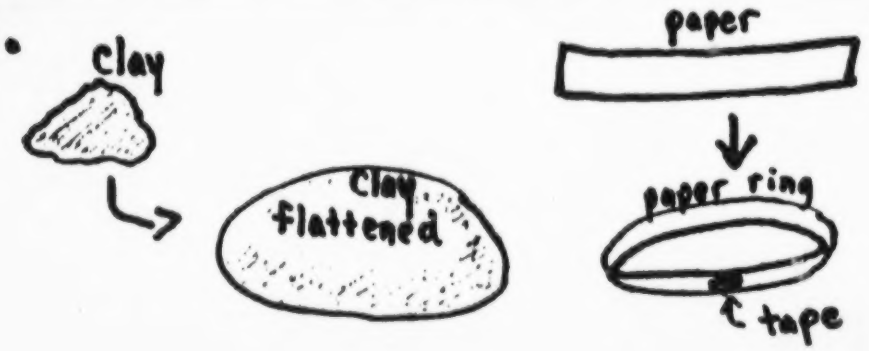
pelican

Whose foot do these bones belong to?

turtle, pelican, rhinoceros, lizard, monkey

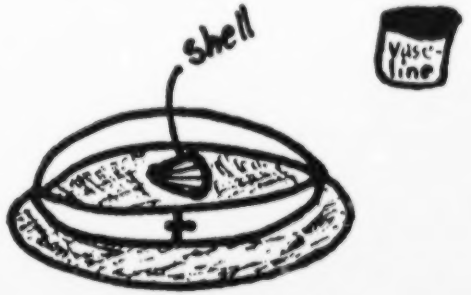
How To Make Fossil Models :

1.



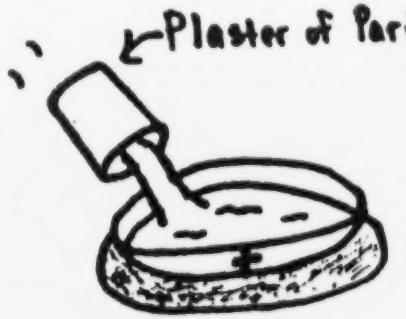
Flatten a piece of plasticine or modeling clay large enough for your object (shell, leaf, etc.) to fit. Make a ring shape out of a piece of thick paper and tape the 2 loose ends.

2.



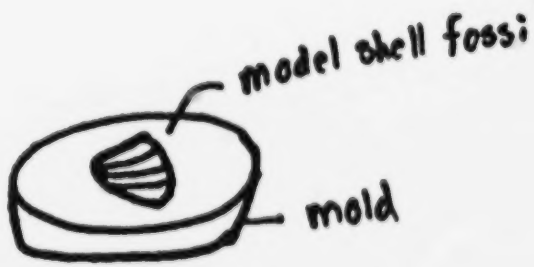
Push the ring into the clay. Cover the shell or other object with a little vaseline and press object into the clay, just enough to make it lay flat.

3.



Pour a thin layer of plaster of Paris into the ring, enough to cover object. Let dry for about 1/2 day.

4.



Remove the ring and carefully separate clay from the Plaster of Paris mold. Gently remove the shell, leaf or other object used. Now you have a model of a fossil.

How do hard parts of animals get preserved?

exercise:

Styroform cup
punch holes
fill with mixture of sand and mud include small shells
mix white glue with water and pour into mixture
let dry (15-30 minutes) and repeat
can use water + glue over again

1. How many times do you have to repeat before the mixture becomes stone? _____

2. Explain how hard parts get preserved?

LIFE CYCLE

ANIMAL LIFE

Children are fascinated with living organisms, so learning about the different groups can be fun. Just because a child knows what an organism looks like, doesn't mean that they understand the natural habitat of these animals. Many organisms have such unique lifestyles. These activities can be easily be made "hands on" by bringing in the organisms. Key concepts that should be learned is that there are many organisms besides humans, dogs and cats. These organims all reproduce to insure that their species will survive. Students should appreciate that we as humans are only a small constituent of our living planet.

LOWER PRIMARY

A. WHAT IS LIFE? - What is living? What is non-living? Can something living become non-living? What kinds of animals live on earth? What are the names of the animals I see everyday?

B. ORGANISMS WITH BACKBONES - What are vertebrate animals? What are fish? What are mammals? What are reptiles? What are amphibians?

C. ORGANISMS WITHOUT BACKBONES - What are invertebrates? What are the different kinds of animals without backbones? How do these animals live and feed?

UPPER PRIMARY

These grades should expand on information of the different groups of organisms.

D. BUILDING BLOCKS OF LIFE - What are cells? What is a nucleus? How do cells become organs and tissues? Do all organisms have cells?

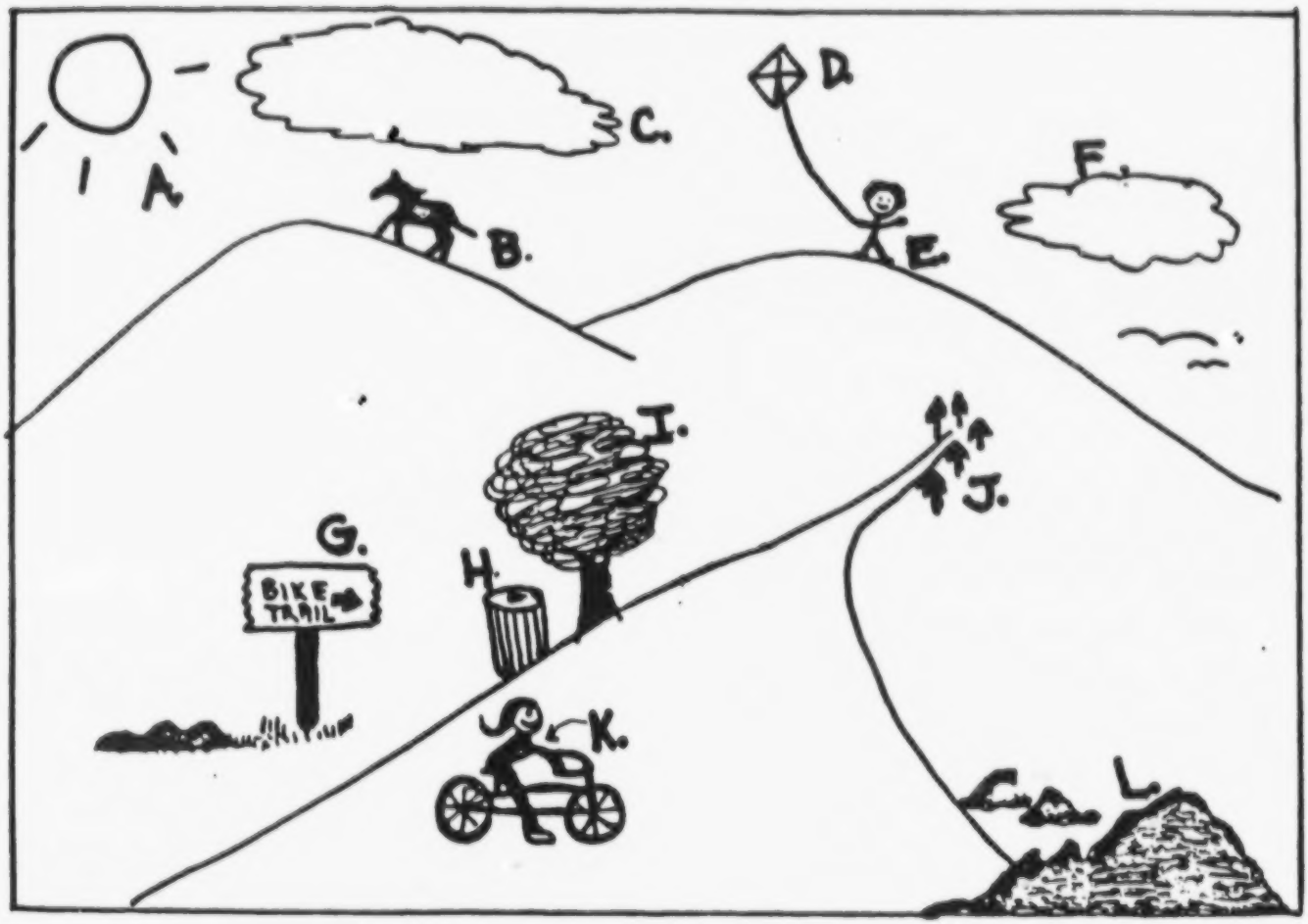
E. REPRODUCTION - Why do animals reproduce? What is asexual reproduction? What is sexual reproduction? How do the different organisms reproduce? Why do they reproduce in this manner?

F. HOW IS LIFE CLASSIFIED? What are kingdoms? How would you group living organisms? What are animals? What are fungi? What are plants? What are protozoa? What are monera?

Teacher's Sheet - Make students put labeled items into two categories ... living and non-living.

LIVING

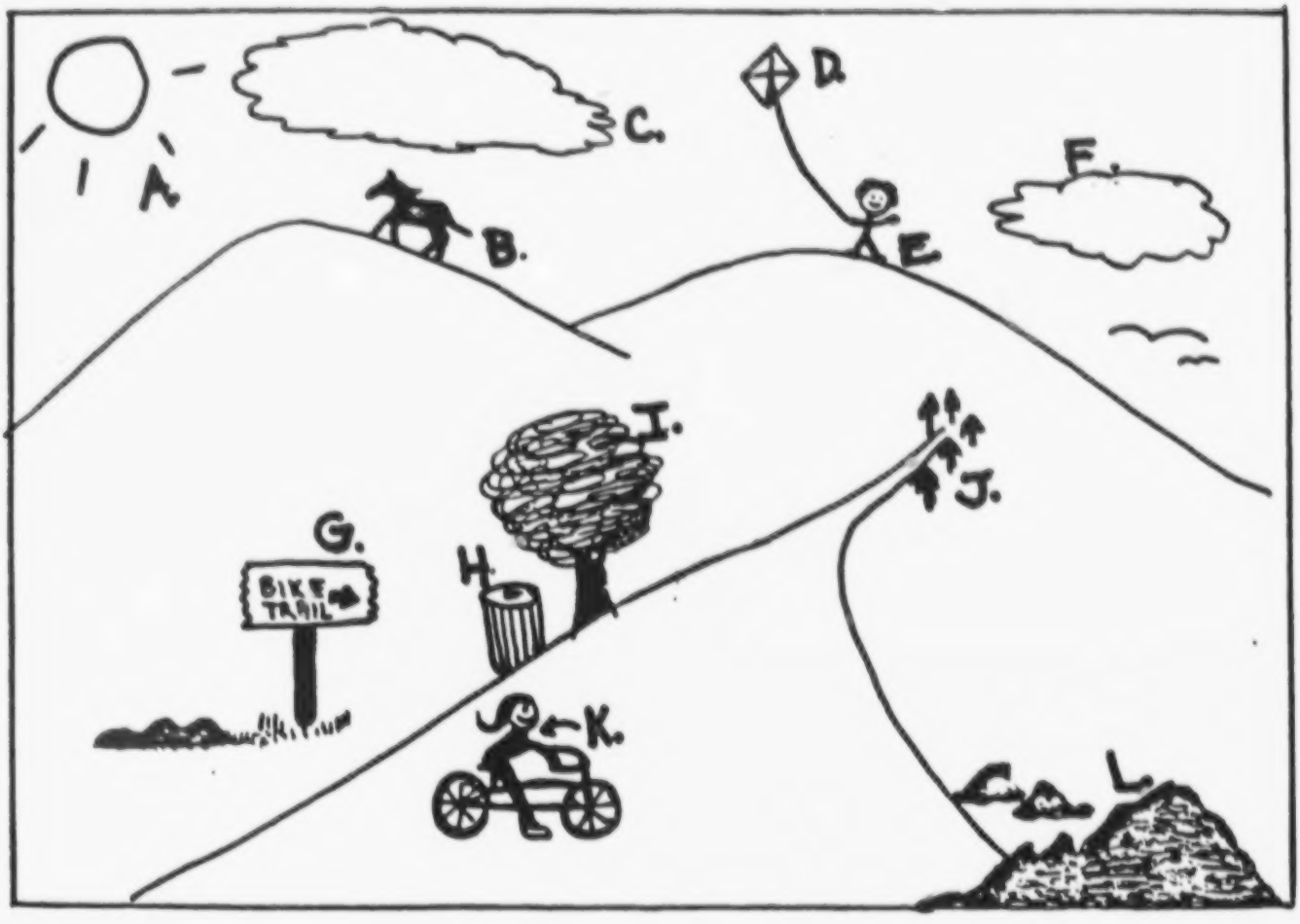
B, E, K, I, J



NON-LIVING

A, C, D, F, G, H, L

LIVING



NON-LIVING

Teacher's Sheet - Reinforce these are animals with backbones

name

Mamals — ie. cow, dogs, people

Fish — ie. tuna, cod goldfish

Birds — ie. robin, bluejay duck

Reptiles — ie. snake, alligators turtles

Amphibians — ie. frogs, salamanders, newts

name

Teacher's Sheet: students are asked to use their imagination on organisms. This description is not real, but students can compare with others in the class, to see the variability.

Draw me

My name is Jumpy. I have 4 legs, fur, horns, sharp teeth and a tail.

name

Mamals

Fish

Birds

Reptiles

Amphibians

name

Draw me

My name is Jumpy. I have 4 legs, fur, horns, sharp teeth and a tail.

Teacher's Sheet - Reinforce that these are animals without backbones.

name

clam — ie. mussels, scallops organisms with a shell

worm — ie. earthworms organisms that are segmented

crab — organisms that are jointed

jellyfish — organisms that float in the water

starfish — organism that has 5 arms

name

clam

worm

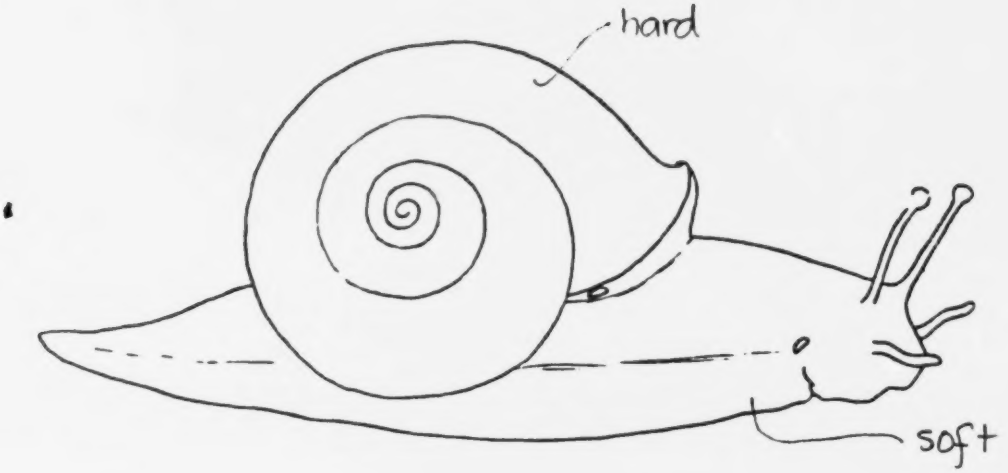
crab

jellyfish

starfish

Teacher's Sheet - Have students distinguish between hard parts and soft parts.

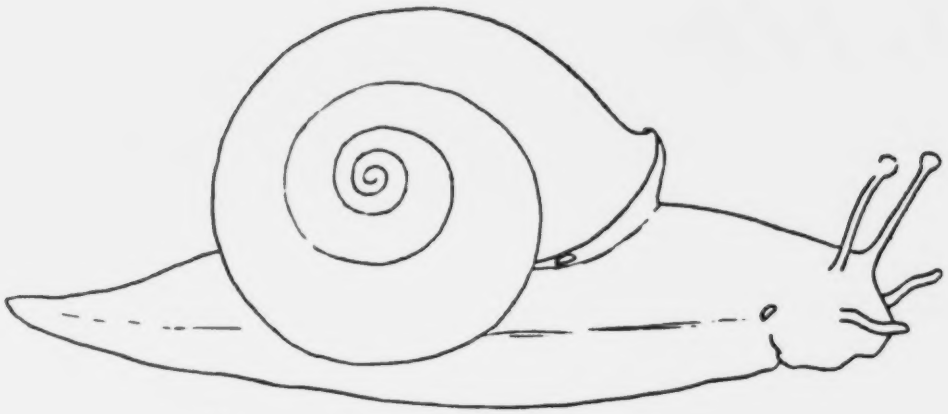
name _____



What will be left when this snail dies?

Shell

name _____



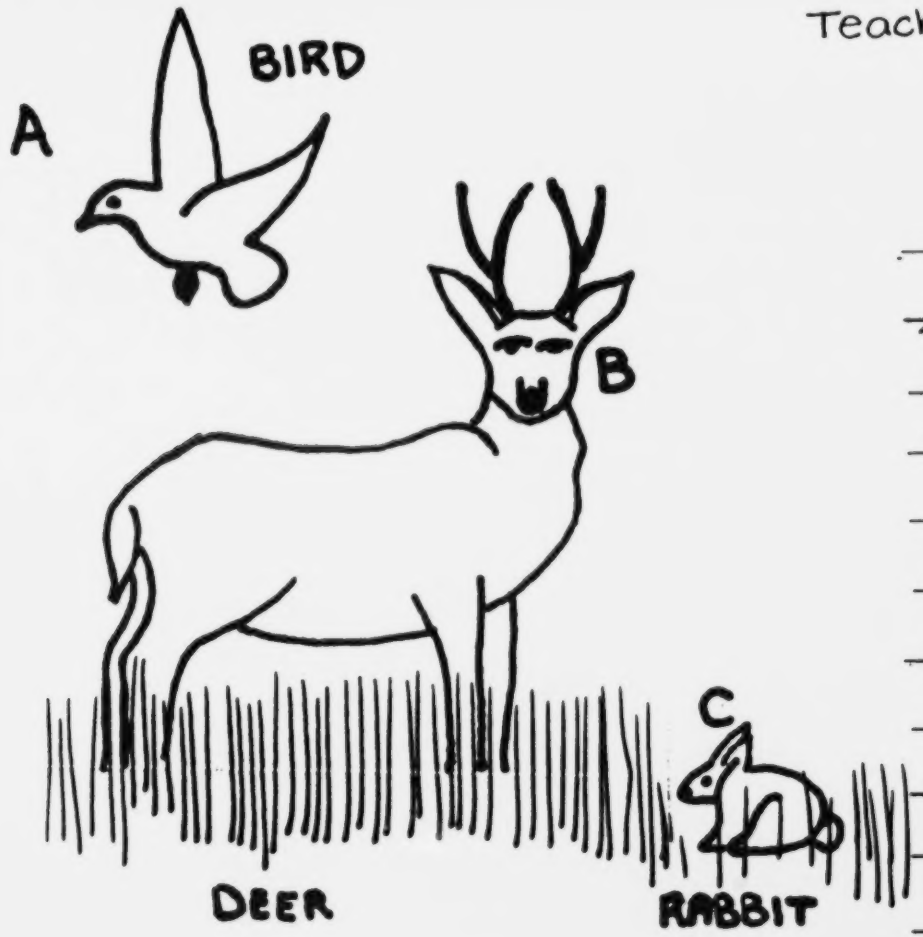
What will be left
when this snail dies?

Teacher's Sheet- Reinforce that rats are mammals (so they have backbones). Have students color picture.

I am small,
furry and squeak.
I am a R A T.

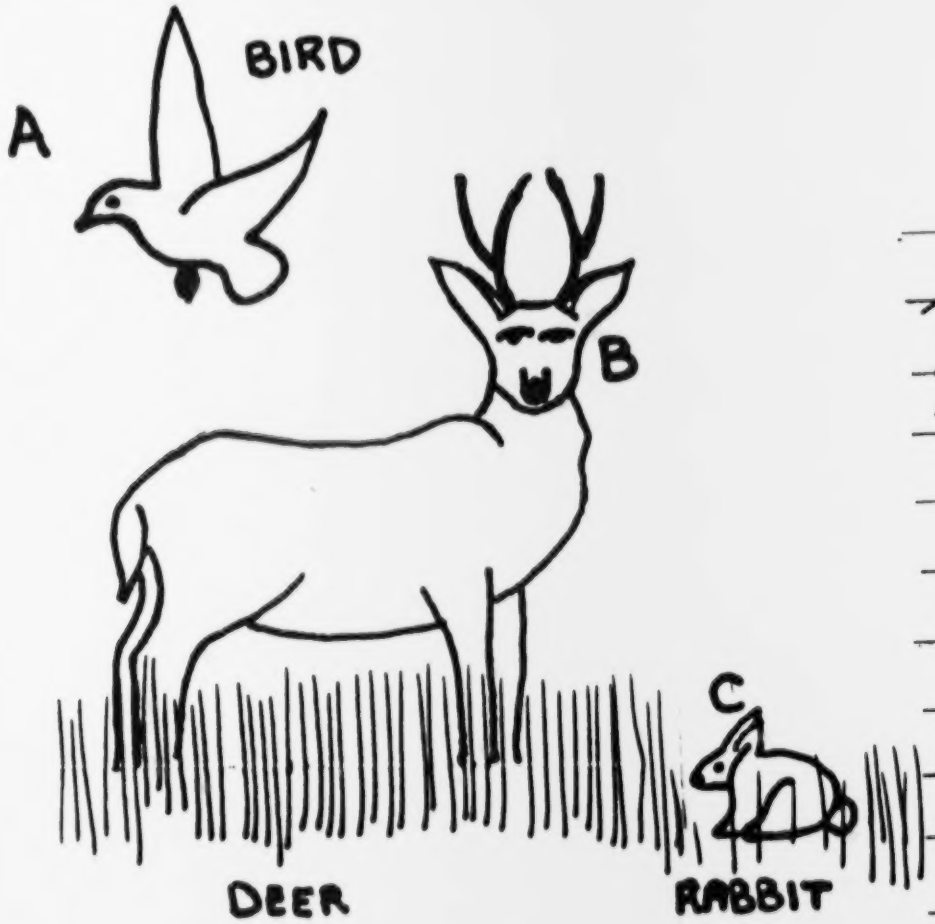
I am small,
furry and squeak.
I am a ____.

Teacher's Sheet - Organisms leave different tracks, that can be recognized as belonging to that animal.



name the animals with backbones.

B A C



name the animals with backbones.

Teacher's Sheet - Reinforce that a snake is a reptile with a back bone.

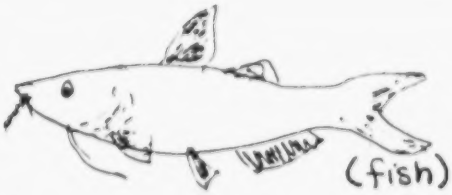
name

What do I eat?

(can)

(grass)

(rabbit) ✓



(fish)

(bird) ✓

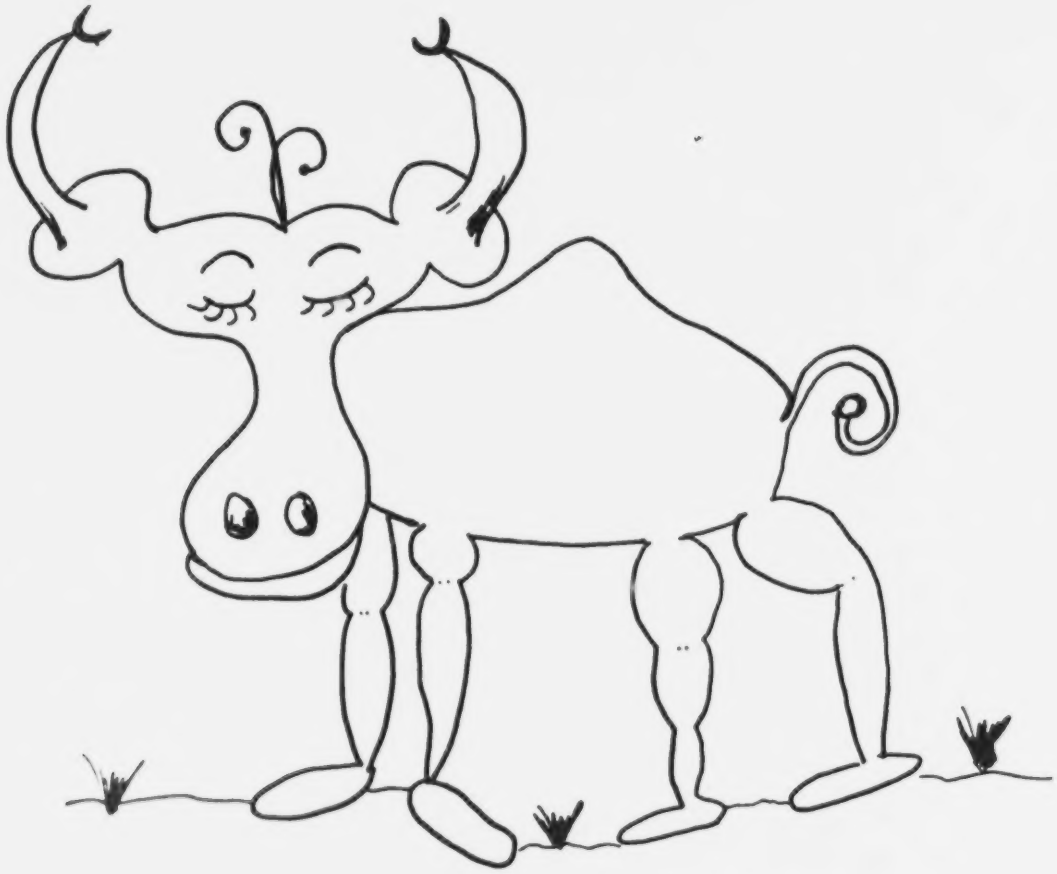
(small rodent) ✓

name

What do I eat?

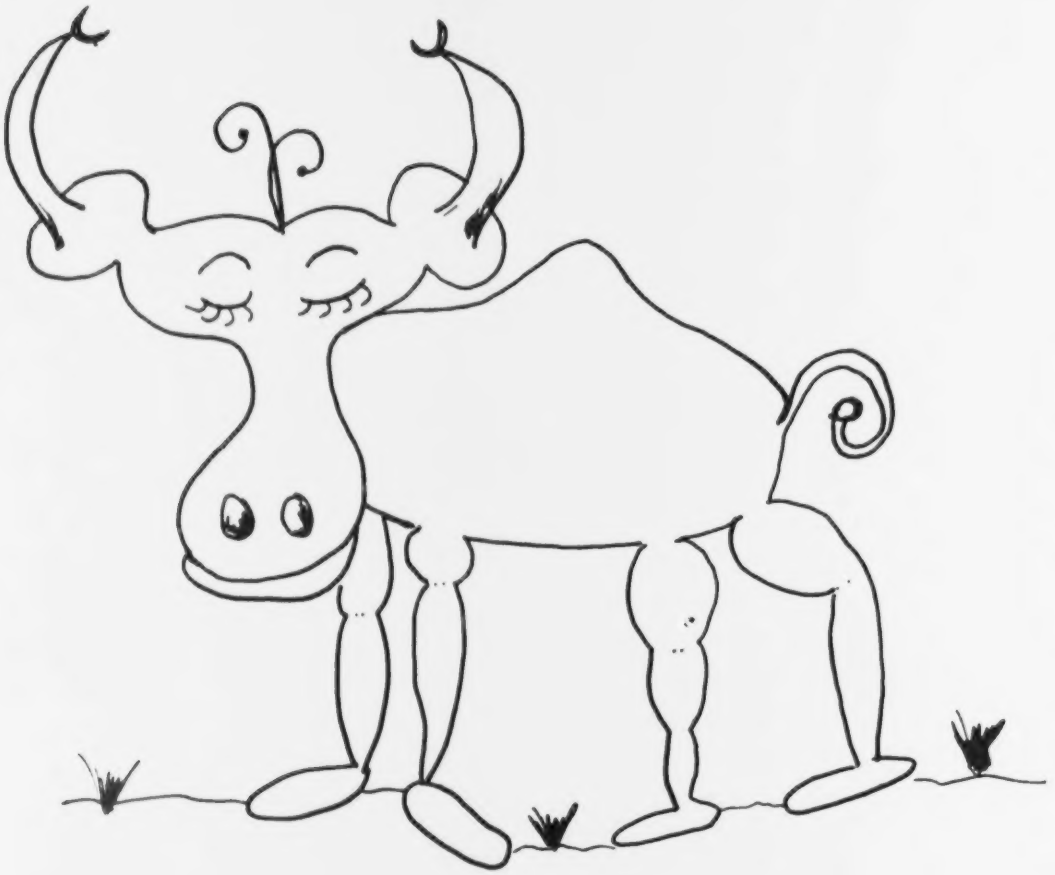
Teacher's Sheet

name



students should pick up characteristics such as:
mouth of cow, back like camel, horns like an elk,
tail like pig - this exercise should be given after
the one which allows them to draw the organism first.

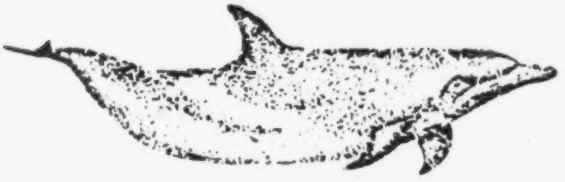
name



Teacher Sheet

name

What kind of organisms are the following?
invertebrates, vertebrates or plants



vertebrate

plant

invertebrate

vertebrate

vertebrate

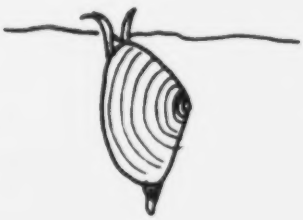
invertebrate

vertebrate

invertebrate

name

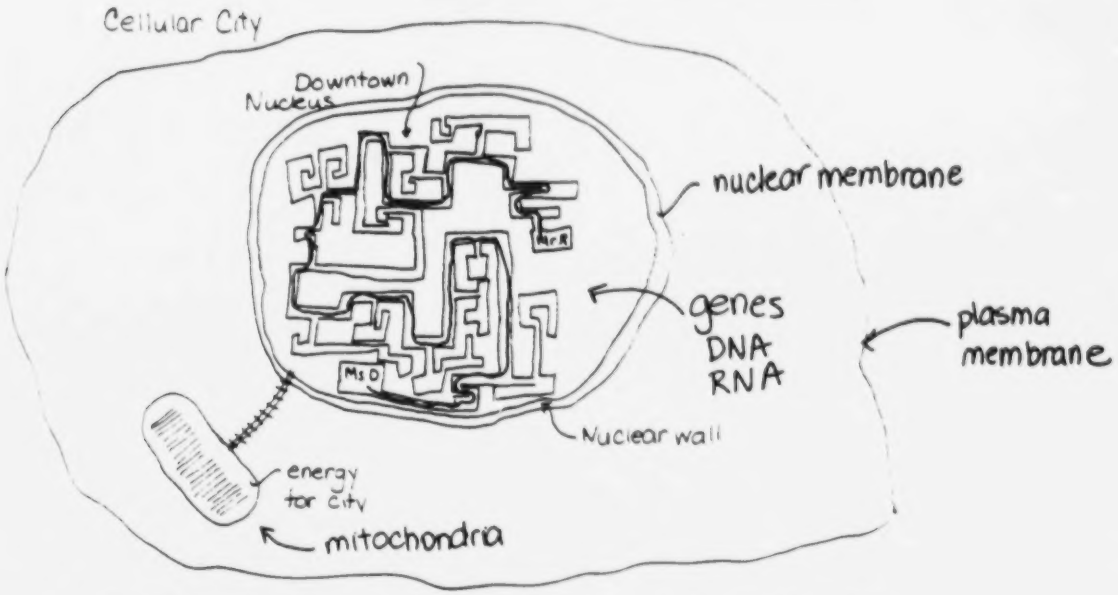
What kind of organisms are the following?
invertebrates, vertebrates or plants



TEACHER SHEET
FOURTH GRADE - ANIMAL LIFE

This "maze" illustrates the importance that DNA (Mr D) and RNA (Ms R) are to the reproducing cells. The message must come from RNA to be decoded by DNA so it can split into another cell.

name _____



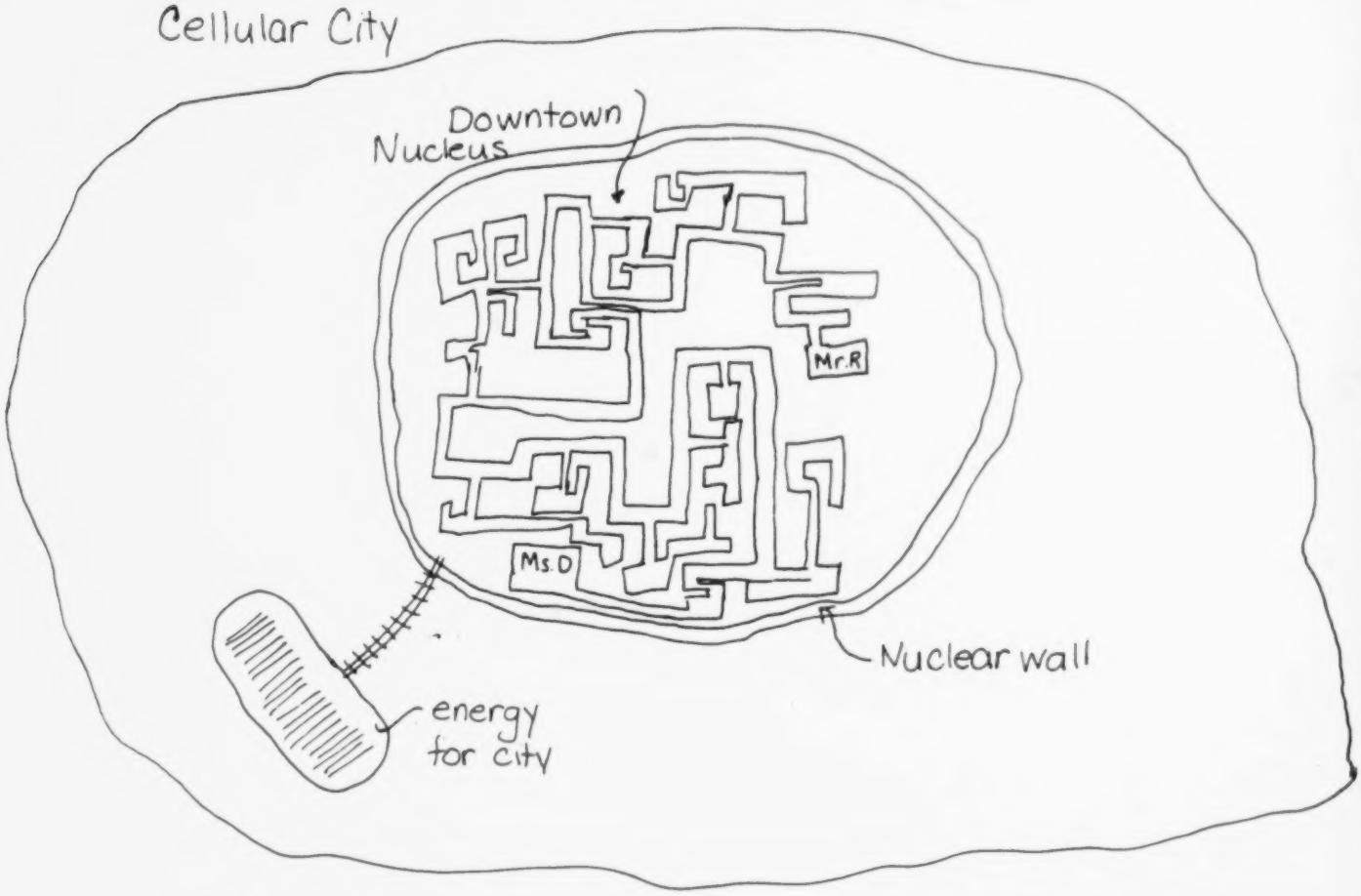
Ms D (DNA) has to "split" the Cellular City to make it on her own. Ms D can't split until Mr R (RNA) gets the message to her, through the genetic path. Find this genetic path that Mr R will use to get the information to Ms D.

Label on the diagram where the following are located:

genes
mitochondria
nuclear envelope
plasma membrane
DNA
RNA

name _____

Cellular City



Ms. D (DNA) has to "split" the Cellular City to make it on her own. Ms. D can't split until Mr R (RNA) gets the message to her, through the genetic path. Find this genetic path that Mr. R will use to get the information to Ms. D.

Label on the diagram where the following are located:

genes
mitochondria
nuclear envelope
plasma membrane
DNA
RNA

TEACHER SHEET
FIFTH GRADE - ANIMAL LIFE

Asexual reproduction is when a mother cell breaks into two daughter cells to create 2 individuals. Half of the cells grows into another whole. Sexual reproduction is when half of the material comes from the father(sperm) and half comes from the mother(egg). The mother and father do not lose their identity, but one (daughter or son) is added. These kind of reproductive stratigies are used depending on how big the organisms is. The smaller the organism (usually one celled organims) the more efficient it is to reproduce asexually. Organisms that have organs and other complex structures cannot reproduce sexually.

name _____

Reproduction

Asexual

How can a daughter become as big as the mother?
yes

How does the mother break? in half

What organisms have asexual reproduction?
little one celled creatures

Sexual

♀ → egg + a sperm ← ♂ = daughter / son

What does ♀ mean? female ♂? male

What is produced? a baby

What organisms have sexual reproduction?
larger organisms with organs

Why do organisms have these 2 different methods of reproduction?
larger organisms cannot simply divide, more efficient for little ones

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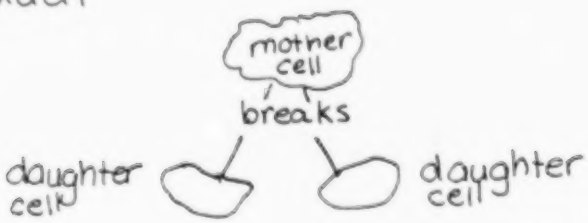
name _____

Reproduction

Asexual



How can a daughter become as big as the mother?

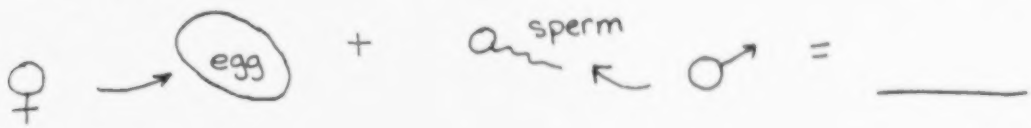
_____

How does the mother break? _____

What organisms have asexual reproduction?

_____

Sexual



What does ♀ mean? _____ ♂? _____

What is produced? _____

What organisms have sexual reproduction?

_____

Why do organisms have these 2 different methods of reproduction?

_____

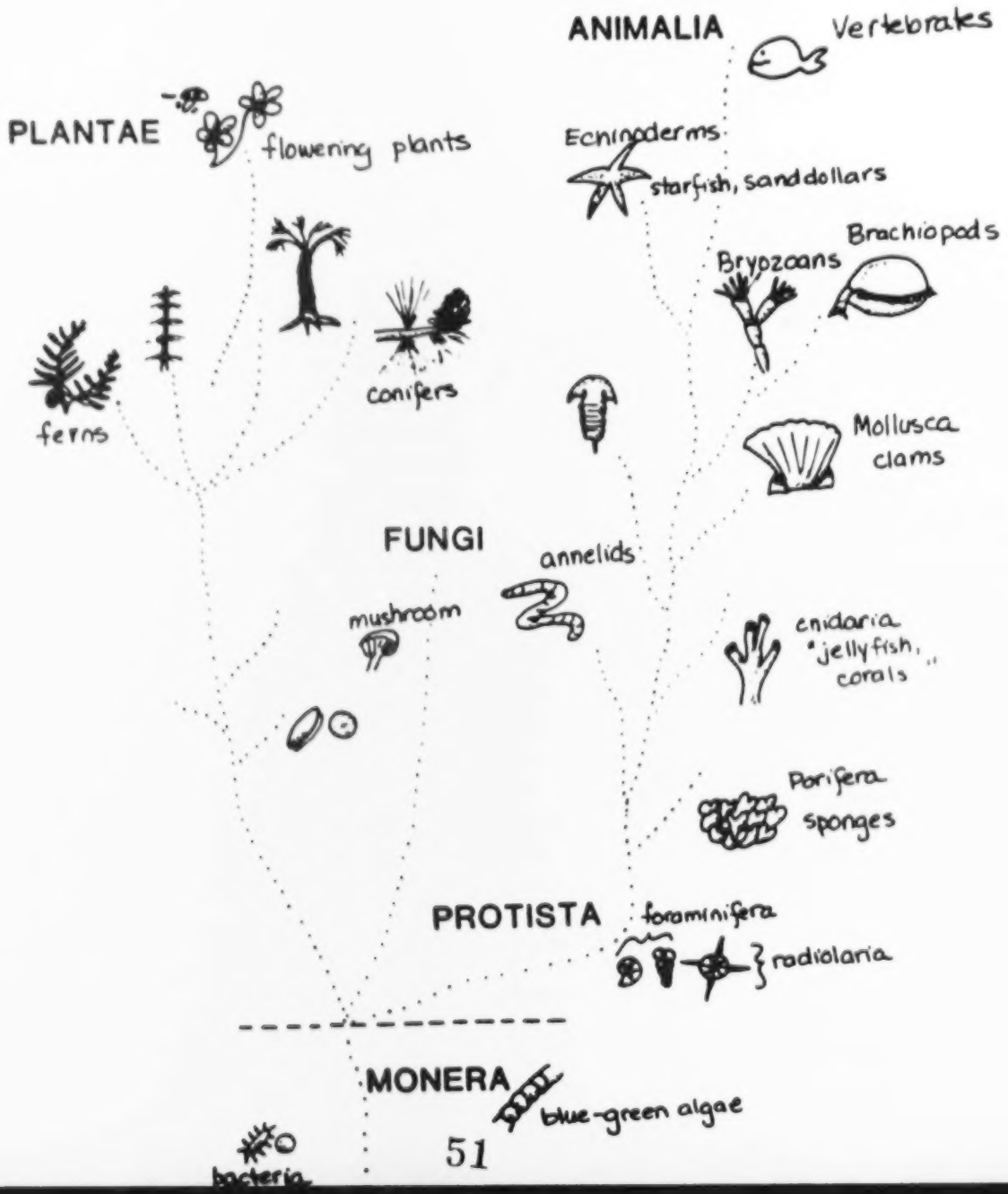
_____

_____

TEACHER SHEET

HOW IS LIFE CLASSIFIED?

The tree of life introduces the five kingdoms. Don't emphasize one group more than another. Have students get pictures from magazines of the different groups. When class returns next day, draw the five kingdoms as in figure 1. See if students emphasized one group more than another. Discuss the major groups and how they are different from each other.



CHARACTERISTICS OF THE 5 KINGDOMS

Kingdom - Monera

The simplist of organisms in the 5 kingdom system. It is made up of:

Bacteria

Blue-green algae

Kingdom - Protista

Is the second simplist of organisms in the 5 kingdom system.

Diatoms

Radiolarians

Foraminifera

Ciliates

Ameboids

Dinoflagellates

Sporozoans

Euglenoids

Kingdom - Fungi

Rob food from other organisms because they cannot make their own food. Are a group of simple plants which all lack chlorophyll (the green color of plants).

Molds

Mildews

Mushrooms

Yeasts

Kingdom - Plant

A living organism characterized by the ability to keep on growing, cannot to move on its own, makes chlorophyll (the green coloring of plants), can photosynthesize (able to make its own food by using sunlight, water and carbon dioxide - what we breathe out), made of cellulose (we have blood), and are multicellular or many celled.

Mosses

Ferns

Conifers

Flowering plants

Kingdom - Animal

Compared to the plants, animals have a limit to their growth(size is definite), do not have cellulose(have blood instead), are able to move about, and react quickly when something comes in contact with the body of an animal- something hot, cold, sharp, wet, dry, etc.

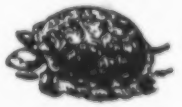
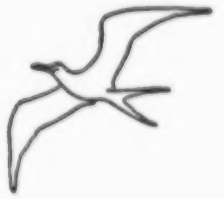
INVERTEBRATES:

Sponges Jellyfish Roundworms Brachiopods Clams

Earthworms Insects Starfish

VERTEBRATES:

Fishes Amphibians Reptiles Birds

Mammals

***Invertebrates are those animals which have no backbone or spinal column.

***Vertebrates are those animals which have a backbone and spinal column.

LIFE CYCLE

PLANT LIFE

We are not only surrounded by plants but are totally dependent upon plants for the oxygen and food they produce. Thus, the factors that influence plants also greatly affect the animal world. Children see plants all around them so they are familiar with the uses of plants. Use this to extend their knowledge about plants and their uses. Illustrated how we use plants for shelter, wood, clothes, paper, food, and drugs. There are two ways to produce useable items in this world, either grow it or mine it...and the plants do the growing.

LOWER PRIMARY

A. WHAT ARE PLANTS? - Are plants living? How are plants different from animals? Can we eat all plants? How many plants are there? Do any plants live in the water?

B. PLANT PARTS - Do plants have parts? How many parts do plants have? Do different plants have different parts? Do the parts have different functions? How is a tree different from a blade of grass? What are flowers, fruits, cones and seeds?

C. HOW DO PLANTS GROW? - Do plants grow like people? Do plants eat? Can plants grow in the dark without water? Do plants need to breather? How do plants reproduce? Why is soil important to plants?

UPPER PRIMARY

D. ARE PLANTS IMPORTANT? - Can we live without plants? What have plants given us? Are all plants important? Do we hurt plants by using them?

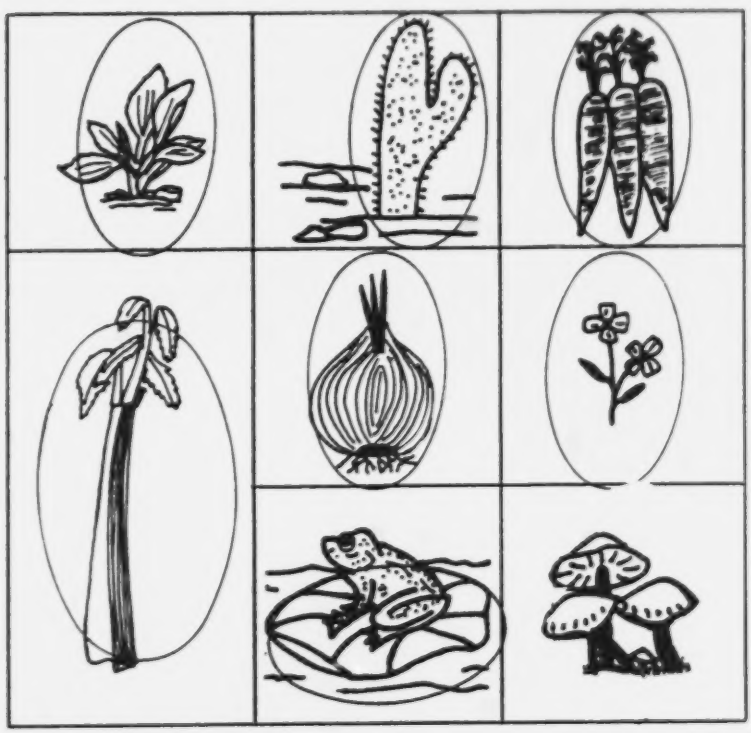
E. WHAT IS PHOTOSYNTHESIS? - How do plants make food? What kind of food do plants make? Why is chlorophyll important for plants to make food? How do plants use the sun and carbon dioxide to make food? Can plants without leaves make food? Do plants make all the oxygen we breathe?

TEACHER SHEET
KINDERGARTEN - PLANT LIFE

Plants are living organisms and thus share common characteristics with all other living organisms. They both are composed of cells, grow, reproduce and respond to various kinds of stimuli (hot, cold, touch, etc.). However, plants have an additional characteristics which distinguishes them from animals. Plants have: (1) the ability to manufacture food (photosynthesis), (2) unlimited or almost unlimited growth, and (3) cell walls made of cellulose (used for paper material). Students should learn that most plants are green, have roots, grow tall, have flowers, have leaves, live in soil and drink water.

Name _____

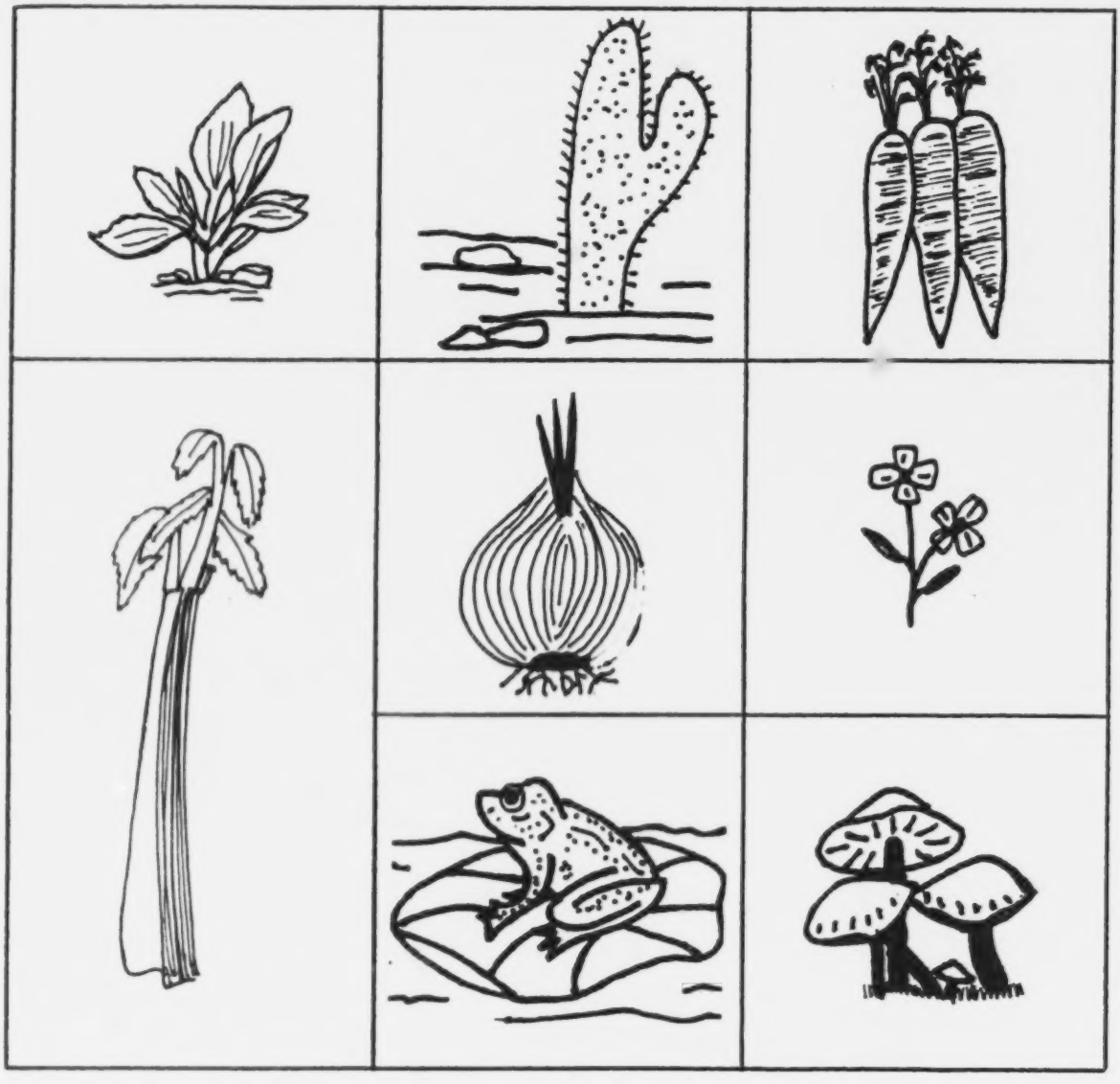
WHAT ARE PLANTS ?



Put a circle around those things that are plants.

Name _____

WHAT ARE PLANTS ?



Put a circle around those things that are plants.

TEACHER SHEET
FIRST GRADE - PLANT LIFE

A brief description of major plant parts and their function are as follows:

I. Woody plants (plants with woody, hard, thick stems and generally long-lived; example trees and shrubs)

leaf - an outgrowth of the stem usually thin and flat, needlike or scalelike; usually green in color due to chlorophyll; provides surface area necessary for absorption of sunlight which begins the process of photosynthesis

branch - a secondary wood limb growing from the trunk of a plant; transports materials from the tree trunk to the leaves

trunk - massive, primary stem of a tree located between the roots and upper tree canopy; provides upright support to tree and transport materials from the roots to the leaves of a tree

roots - usually non-green, found beneath the soil and are greatly branched in appearance; absorbs water and minerals from the soil, anchors the plant to the ground and stores food materials

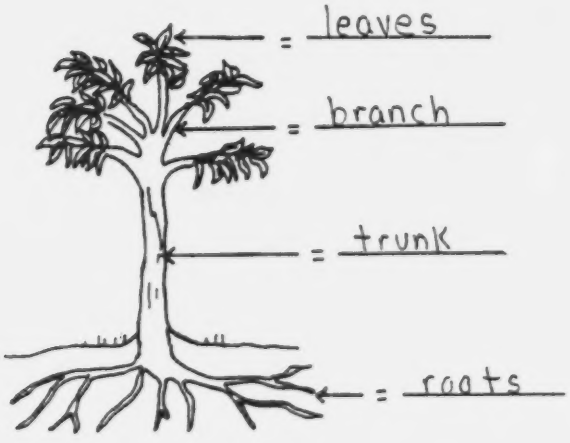
II. Herbacious plants (plants that are soft, green with little or no wood stems and generally short lived (example grasses and garden vegetables)

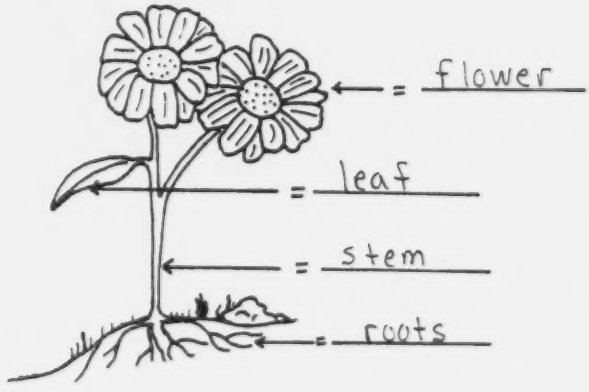
petals - usually brightly colored with a distinctive color; mainly for attracting insects for the purpose of cross-pollination (the transfer of pollen from one flower to another of the same type)

leaf - same description as in wood plants with exception of needle-like or scale-like structure; function is same as in wood plants

stem - the structure between the roots and the leaves, may be wood or non-woody; transports water and minerals from rocks to other parts of the plant and provides for the support of leaves

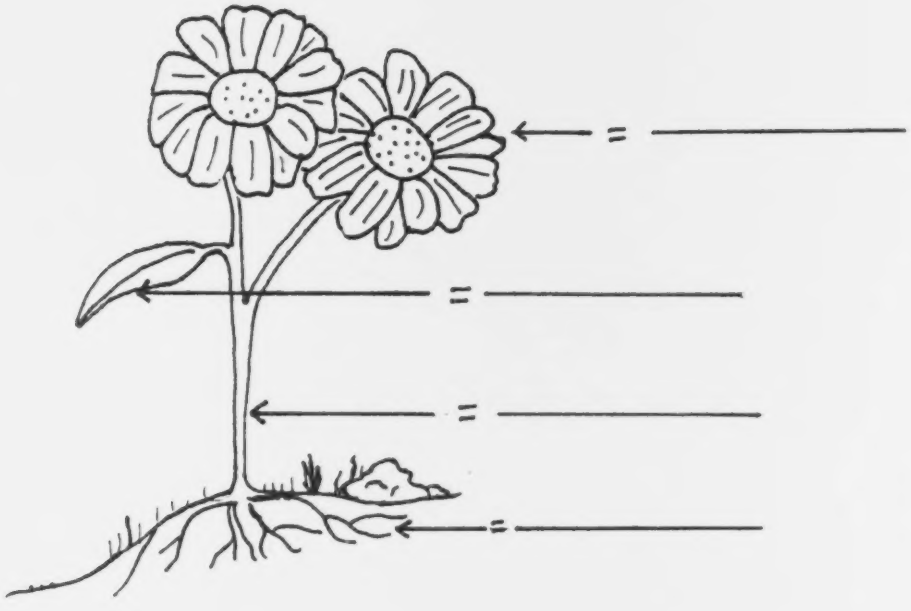
roots - the same description as in wood plants; same function as in wood plants





Name _____

PLANT PARTS



TEACHER SHEET
SECOND GRADE - PLANTS

The flower (please keep in mind that a flower is not a plant type but is a structure formed by some plants for reproductive purposes). A few of the parts of a flower are:

petal - usually brightly colored with a distinct odor which serves to attract insects for cross-pollination (the transfer of pollen from one plant to another of the same type)

stamen - the pollen producing organ of a flower consists of a long filament and an anther

pistil - the seed-bearing female reproductive organ of a flower

sepal - one of the green segments forming the outer protective covering of a flower or the calyx

The tree:

bark - the wood outer covering of roots, stems and main trunks of trees and other woody plants

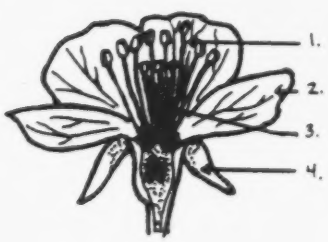
phloem - the pathways through which food material is conducted throughout the plant

pith - the soft central portion of the branches, and stems of plants

annual growth rings - alternate light and dark concentric rings in tree branches and stems due to periods of growth

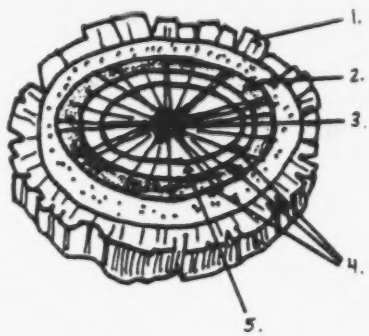
xylem - the pathways through which water is conducted throughout the plant

The Flower :



1. stamen
2. petal
3. pistil
4. sepal

The Tree :

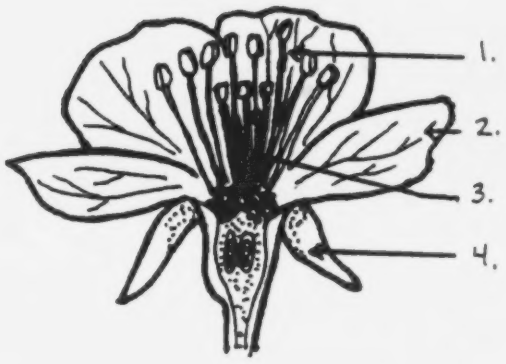


1. bark
2. phloem
3. pith
4. annual growth ring
5. xylem

Name _____

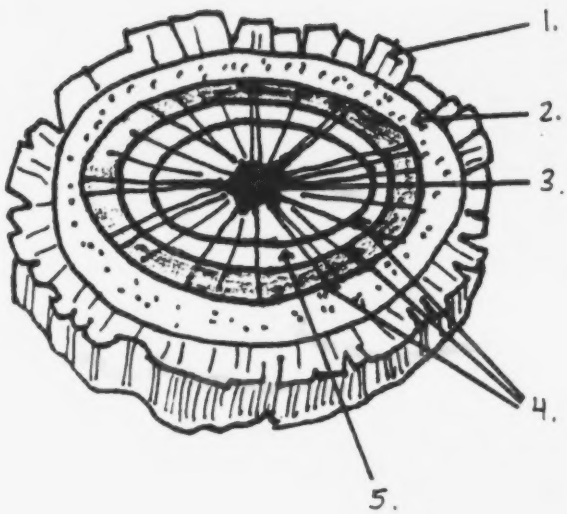
PLANT PARTS

The Flower :



1. _____
2. _____
3. _____
4. _____

The Tree :



1. _____
2. _____
3. _____
4. _____
5. _____

TEACHER SHEET
THIRD GRADE - PLANT LIFE

The growth of a plant is dependent upon seven major requirements: (1) water, (2) light, (3) oxygen, (4) carbon dioxide, (5) mineral in the soil, (6) temperature and (7) microbes in the soil. Requirements 1-5 are covered elsewhere in the unit. A brief explanation of requirements 6 and 7 are as follows:

temperature - or light intensity varies for each different type of plant; helps explain global plant distribution; light intensity or temperature also effects the rate of photosynthesis in a plant; the time at which a plant flowers and the rate at which water loss occurs in a plant called transpiration

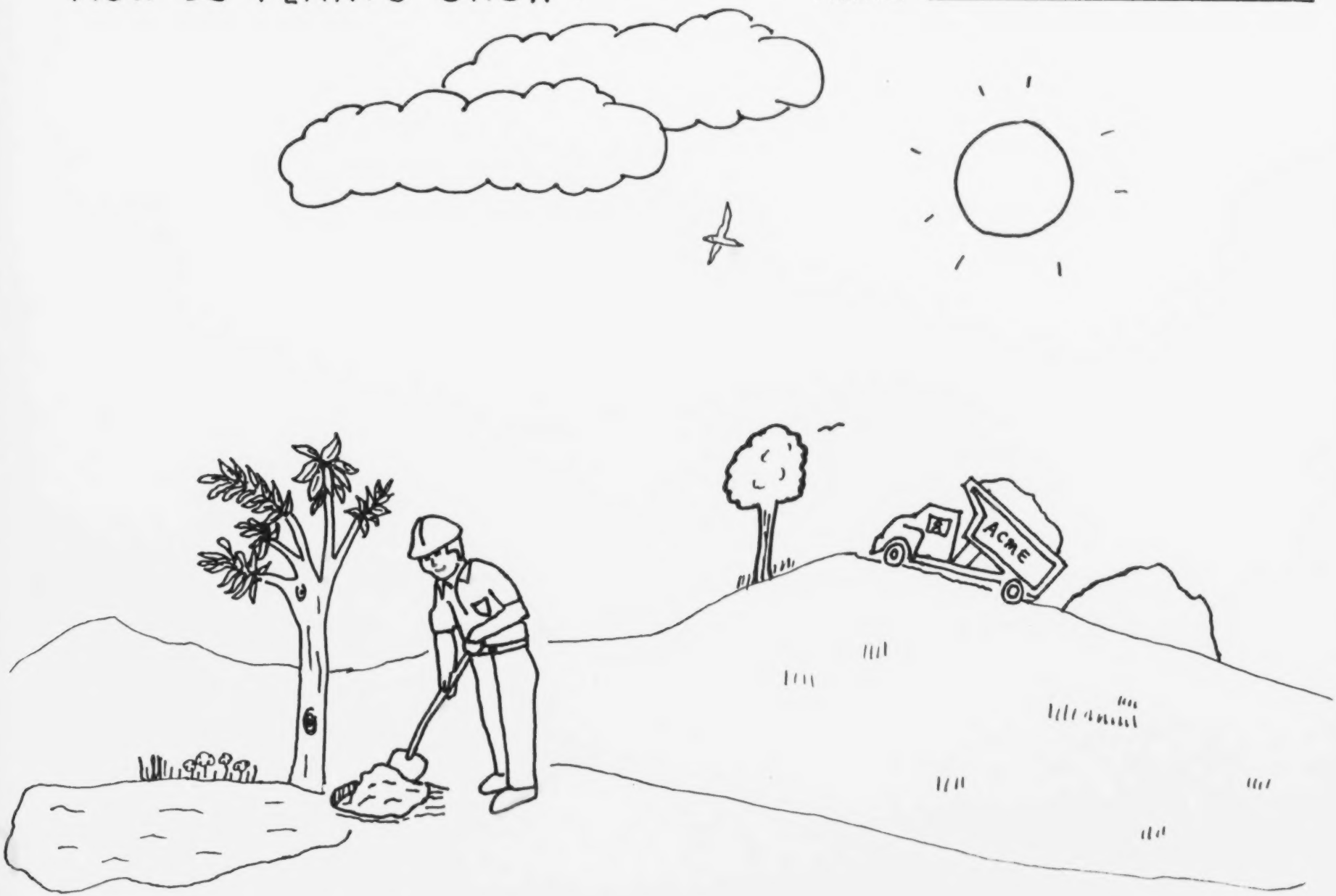
microbes in the soil - a number of microbes are very beneficial to plants; microbial activity help bring about the decay of organic material (dead plant material and animals) necessary for the production of soil

HOW DO PLANTS GROW? Name _____

Color only those things required for plant growth.

HOW DO PLANTS GROW?

Name _____



Color only those things required for plant growth.

TEACHER SHEET
FOURTH GRADE - PLANT LIFE

The roots of a plant will take in almost anything soluble from the soil, even toxic substances. However, there are certain elements that most all plants must get in order to survive. Too determine how essential an element is, it must be shown that abnormal growth in the plant will occur without it and that normal development will resume once the element in question is added. The essential elements are listed on the activity sheet. The lack of any one of these will result in abnormalities or even death of certain plants.

Name _____

HOW DO PLANTS GROW ?

The essential elements for plant growth are : carbon , hydrogen, oxygen, phosphorus, potassium, nitrogen, sulfur, calcium, iron, magnesium, molybdenum, boron, copper, manganese, zinc and chlorine. For most plants, the lack of any one of these will cause abnormal growth and if not treated will result in death of the plant.

Using the three mineral deficiencies listed, draw a plant containing the deficiency symptoms in the box below.

mineral	symptoms
Zn (zinc)	reduced leaf size, distorted leaf margins and yellowing of plant.
Cl (chlorine)	wilted leaves, yellowing and some browning of plant, thickened roots, especially near the tips.
Mo (molybdenum)	twisting and death of young leaves.

Name _____

HOW DO PLANTS GROW ?

The essential elements for plant growth are : carbon , hydrogen, oxygen, phosphorus, potassium, nitrogen, sulfur, calcium, iron, magnesium, molybdenum, boron, copper, manganese, zinc and chlorine. For most plants, the lack of any one of these will cause abnormal growth and if not treated will result in death of the plant.

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Mo (molybdenum)	twisting and death of young leaves.

TEACHER SHEET
FIFTH GRADE - PLANT LIFE

Plants are the basis for which all other life depends. They are the major source of food and oxygen on earth, no animal alone can supply these. Even the cattle we eat feed on grasses or the fish we eat, consume algae. Other important uses of plants include:

(1) providing shelter for animals
(2) provides materials for clothing (cotton fibers)
(3) paper products
(4) medicines and other chemicals
(5) coal - from once living plant material
(6) furniture
(7) reduces wind speed and noise levels
(8) reduce soil erosion and water runoff

Name _____

Are Plants Important ?

Using only six of the key words listed, write a short essay about why plants are important.

- Cash crops (ie cotton, wheat...)
- soil conservation
- photosynthesis
- food
- water runoff
- shelter
- reduce wind
- reduce noise
- beautiful
- raw materials (ie lumber, paper)

Name _____

Are Plants Important ?

Using only six of the key words listed, write a short essay about why plants are important.

- Cash crops (ie cotton, wheat...)
- soil conservation
- photosynthesis
- food
- water runoff
- shelter
- reduce wind
- reduce noise
- beautiful
- raw materials (ie lumber, paper)

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TEACHER SHEET
SIXTH GRADE - PLANT LIFE

Photosynthesis is the physical and chemical process involved in the trapping of the sun's energy and the use of this energy to manufacture food by green plants. Green plants utilize water and carbon dioxide and in the presence of sunlight and chlorophyll manufacture food. Food making normally occurs in the leaf cells of a plant. Chlorophyll is the substance which gives leaves their green color, and is found within the chloroplasts (small green bodies in plant cells) of leaves. All the things needed by a plant to manufacture food in the form of sugar is transported to the leaves through the roots and stems. The plant cells can convert the sugar into starch for storage or combine it with other materials to build proteins, vitamins or fats.

Name _____

What Is Photosynthesis ?

The chemical equation for photosynthesis is :

$$6CO_2 + 12H_2O \xrightarrow{\text{in presence of chlorophyll and sunlight}} C_6H_{12}O_6 + 6O_2 + 6H_2O$$

I. Using the names of the compounds involved in photosynthesis, translate the chemical equation into a word equation.
compound names : glucose or sugar, water, oxygen, carbon dioxide and water.

carbon dioxide + water $\xrightarrow{\text{chlorophyll, sunlight}}$ glucose + oxygen + water

II. Using the word equation above, diagram the equation for photosynthesis. Don't forget + signs and the arrow →.

Name _____

What Is Photosynthesis ?

The chemical equation for photosynthesis is :

$$6CO_2 + 12H_2O \xrightarrow[\text{and sunlight}]{\text{In presence of chlorophyll}} C_6H_{12}O_6 + 6O_2 + 6H_2O$$

I. Using the names of the compounds involved in photosynthesis, translate the chemical equation into a word equation.
compound names : glucose or sugar, water, oxygen, carbon dioxide and water.

+	$\xrightarrow[\text{sunlight}]{\text{chlorophyll}}$	+	+

II. Using the word equation above, diagram the equation for photosynthesis. Don't forget + signs and the arrow →.

LIFE CYCLE

HUMAN BIOLOGY

The human body is a living, thinking machine. The human body carries on countless functions every living minute of our lives. We can walk, talk and eat with ease and yet we seldom stop to wonder how this is possible. In the lower primary grades children should learn the basic internal and external body parts and their functions - legs to walk, arms to lift, head to see, smell, taste, hear and think, lungs to breathe, bones to support us, etc. In the upper primary grades children should be taught that the body all work together to provide all necessary processes required for life. With this knowledge, children can better understand why they should acquire good eating habits, good oral hygiene, and exercise regularly in order to keep their bodies in the best shape possible for a healthier life.

LOWER PRIMARY

A. BODY PARTS - What are the parts of the body? Can you live without any of the parts? Are hands and arms considered all one part? What is the part between the head and legs called?

B. THE SENSES - What are the senses? How many senses are there? Can we live without senses? Are some senses more important than others? Is common sense one of the senses?

C. HOW DO WE GROW? - What do we need for our bodies to grow? If I eat more will I grow more? What are food groups? What is a balanced diet? Do I need to take daily vitamins to grow? What is growth? Why do we stop growing? Why are some people tall and others short? What is the life cycle?

UPPER PRIMARY

D. HUMAN BODY SYSTEMS - What is a system? How many systems does the body have? How does the digestive, respiratory, circulatory, skeletal, and nervous systems work?

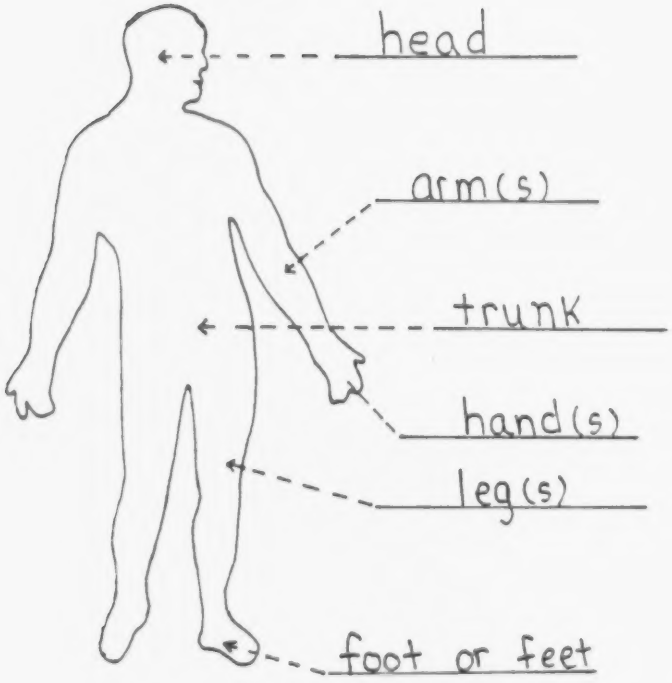
E. WHAT IS DISEASE? - What causes disease? How many diseases are there? Can you have more than one disease? What is a germ? Do all diseases cause death? Are all diseases contagious? Can we prevent diseases?

TEACHER SHEET
KINDERGARTEN - HUMAN BIOLOGY

On the outside, our bodies are separated into the following obvious parts - head, torso, arms and legs. Each major part has a specific function. The legs are used for locomotion like walking, running, jumping and swimming. The arms are used for holding things, lifting, pushing and pressing. The torso or body trunk (the area between the head and legs) is used to bend and twist our bodies around. The head contains the brain which is the "control center" of the body. It tells us what we see, hear, smell, taste and touch.

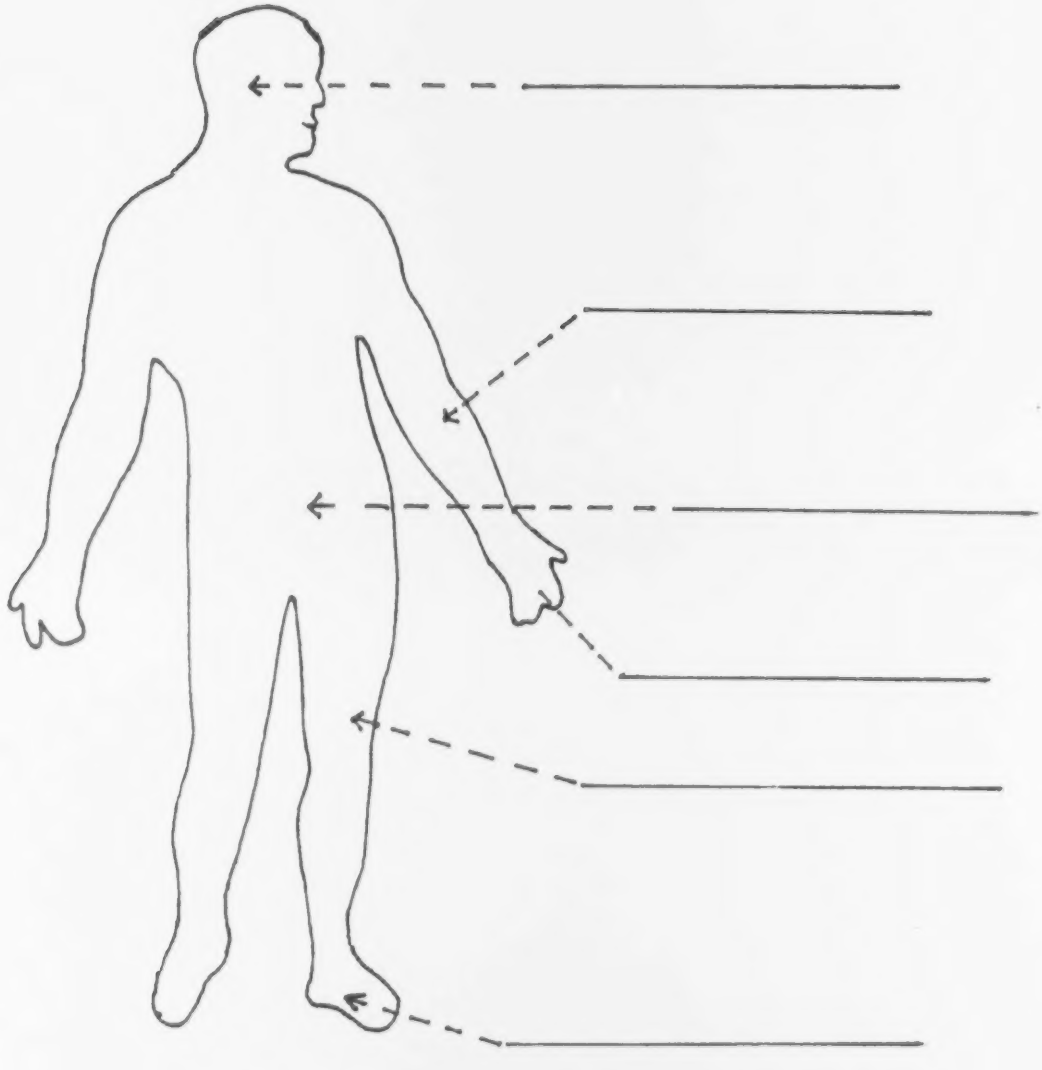
Name_____

Body Parts



Name _____

Body Parts



TEACHER SHEET
FIRST GRADE - HUMAN BIOLOGY

The human body has five major senses which operate to gather information from the world around us - sight, hearing, smell, taste and touch. Any stimulus to any one of the sense areas is detected by sensory nerves and is sent to the brain for interpretation (ie. pain, hot, cold).

SIGHT (EYE) - The eye acts like a camera. Human vision is stereoscopic (seeing three dimensional). When we look at objects two slightly different images are transmitted to the brain, merged and interpreted into the image we see. This allows us to see objects which stand away from the background, not flat like you see in a photogragh.

HEARING (EAR) - The ear is specially made to receive sound waves that are sent out by vibrating objects and converts them into sensations we call sound.

SMELL (NOSE) - The stimulus that excites smell is chemical (ie. onion and garlic give off different chemical sensations).

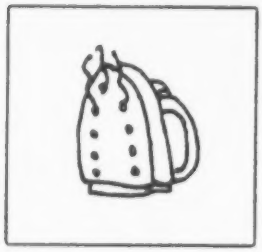
TASTE (TONGUE) - Taste is also a chemical stimulus (ie. sugar and salt). Things to be tasted must touch the tongue, sometimes, tastes become combined with smell because of the connection between the mouth and the back of the nose.

TOUCH - Touch is created by stimulating the skin through the following sensations - touch, pressure, pain, heat and cold.

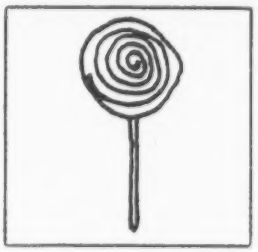
Name _____

The Senses

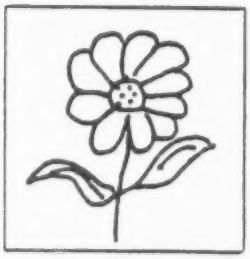
taste, smell, hear, touch, sight



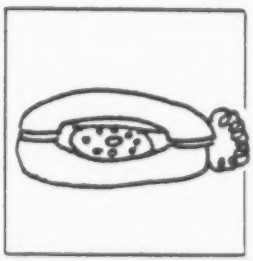
touch



taste



smell

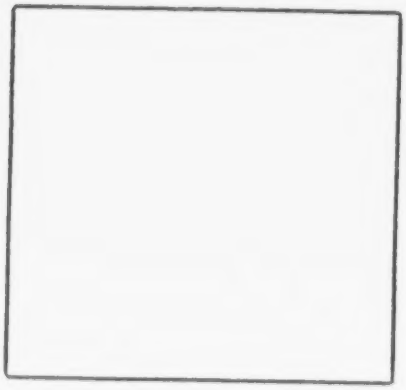


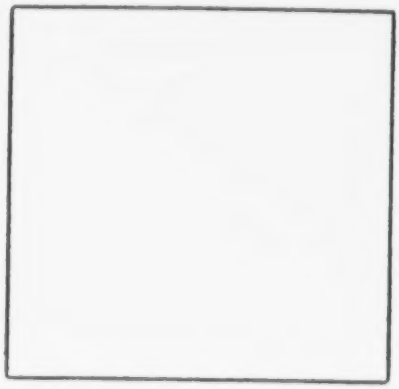
hear

Name _____

The Senses

taste, smell, hear, touch, sight





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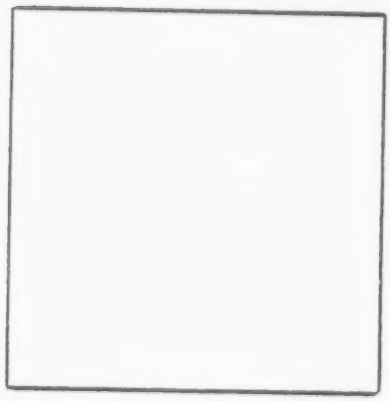
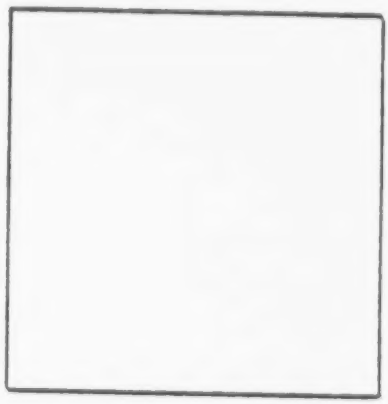




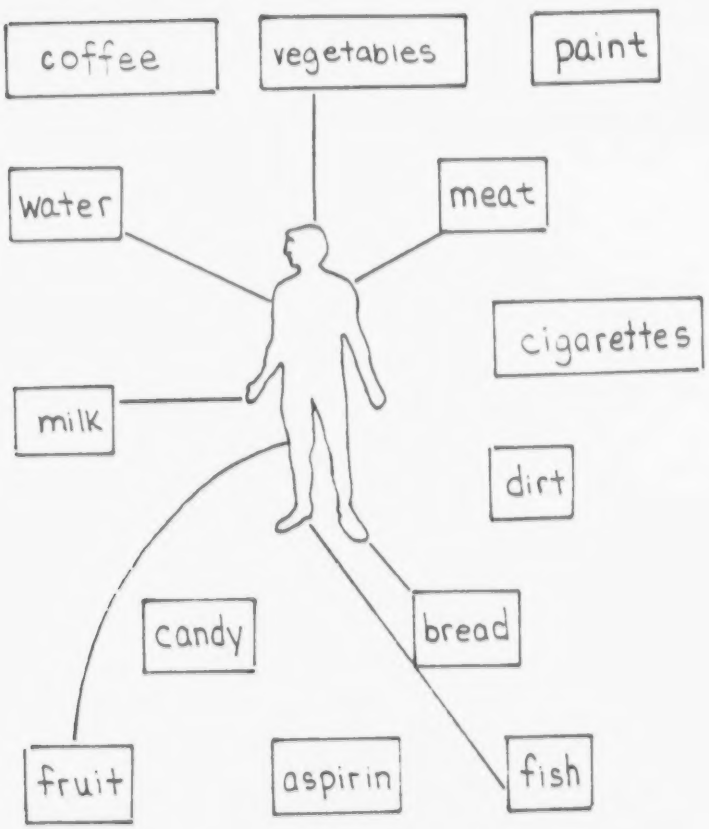
_____ _____

TEACHER SHEET
SECOND GRADE - HUMAN BIOLOGY

In order to grow our body must obtain fuel and energy to meet the needs of our body cells. The substances that meet these needs are called nutrients. Animals take in these nutrients into the body by eating food. Food supplies us with the necessary nutrients which are carbohydrates, protiens, fats, vitamins and minerals. In order to keep our bodies in the best of health we must eat a balanced diet. A balanced died includes eating from the four food groups - milk group, meat group, vegetable and fruit group, and breads and cereals group. Three to four servings from each group per day insures a nutritionally balanced diet.

Name _____

HOW DO WE GROW?



Name _____

HOW DO WE GROW?

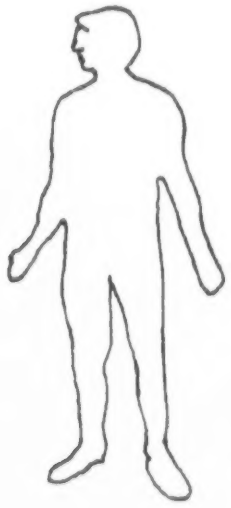
coffee

vegetables

paint

water

meat



cigarettes

milk

dirt

candy

bread

fruit

aspirin

fish

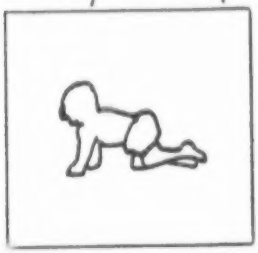
TEACHER SHEET
THIRD GRADE - HUMAN BIOLOGY

Growth is basically an increase in total body mass. The two ways this is accomplished are (1) the enlarging of cell size and (2) through the increase in the number of cells of an organism. The endocrine system is largely responsible for the rate at which we grow. Some organisms stop growing at maturity, others continue to grow throughout their lives like many plants. Living things grow and change. The stages we go through in life is called the life cycle. Humans begin as a single cell and through countless cell divisions develop and are born in nine months time. For several months after birth, a baby is in the stage called INFANCY. As it produces more cells it grows and in a year enters CHILDHOOD. Here a child begins to walk and talk. A stage of rapid growth and change occurs during the teen years - ADOLESCENCE. At about 20 or so a person enters ADULTHOOD, here you are fully grown. It is the longest stage in the life cycle.

Name _____

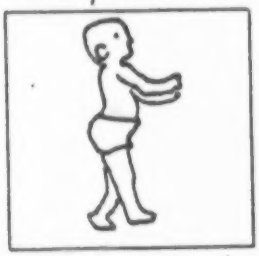
HOW DO WE GROW?

baby with diaper



age 1-12 months

baby walks



age 9-12 months

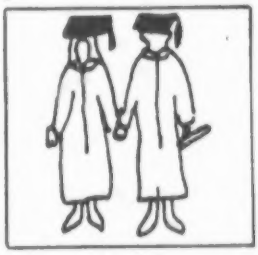
baby talks

age 9-12 months

goes to 5th grade

age 10 yrs.

graduates high school



age 18-19 yrs.

begins working

age 18-20 yrs.

retires from work

age 60-65 yrs.

goes to heaven

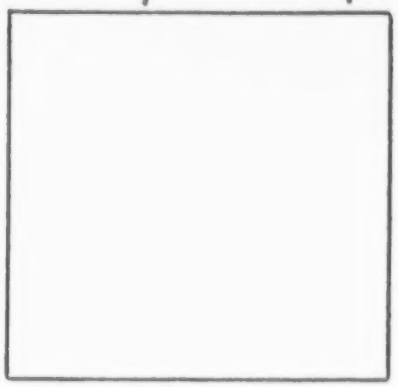
age 65-80 yrs.

NOTE: All ages are approximate.

Name _____

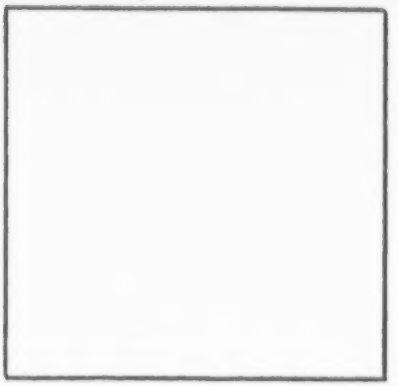
HOW DO WE GROW?

baby with diaper



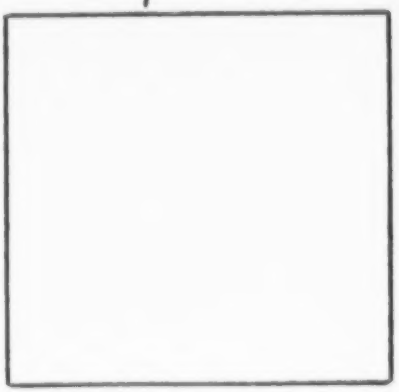
age _____

baby walks



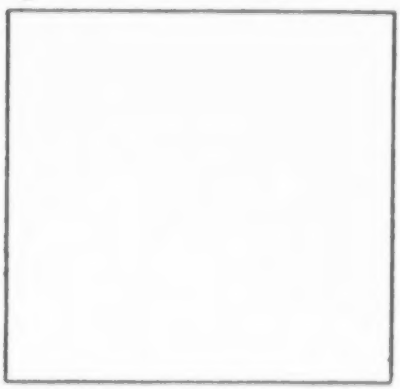
age _____

baby talks



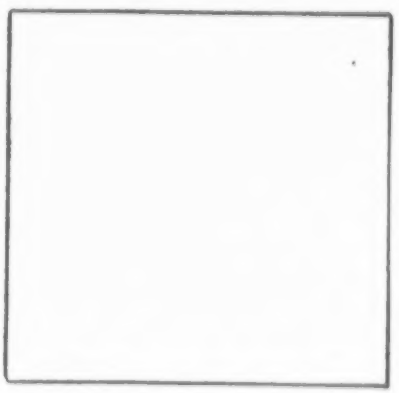
age _____

goes to 5th grade



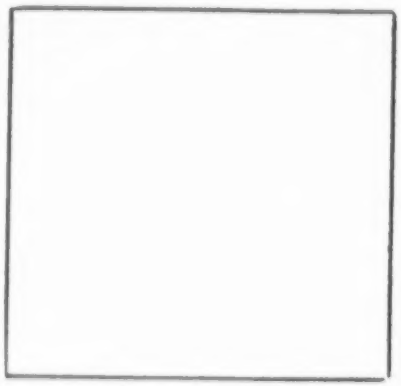
age _____

graduates high school



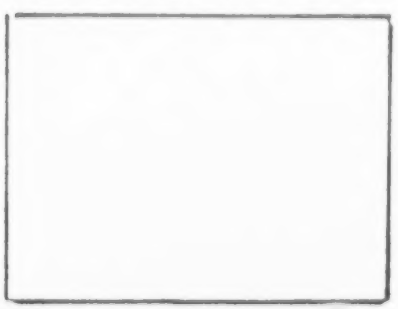
age _____

begins working



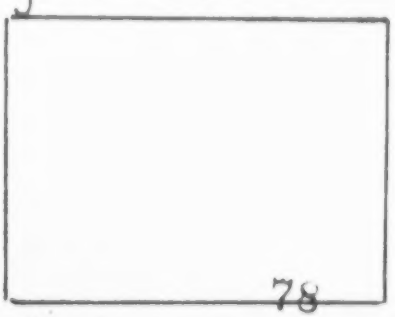
age _____

retires from work



age _____

goes to heaven

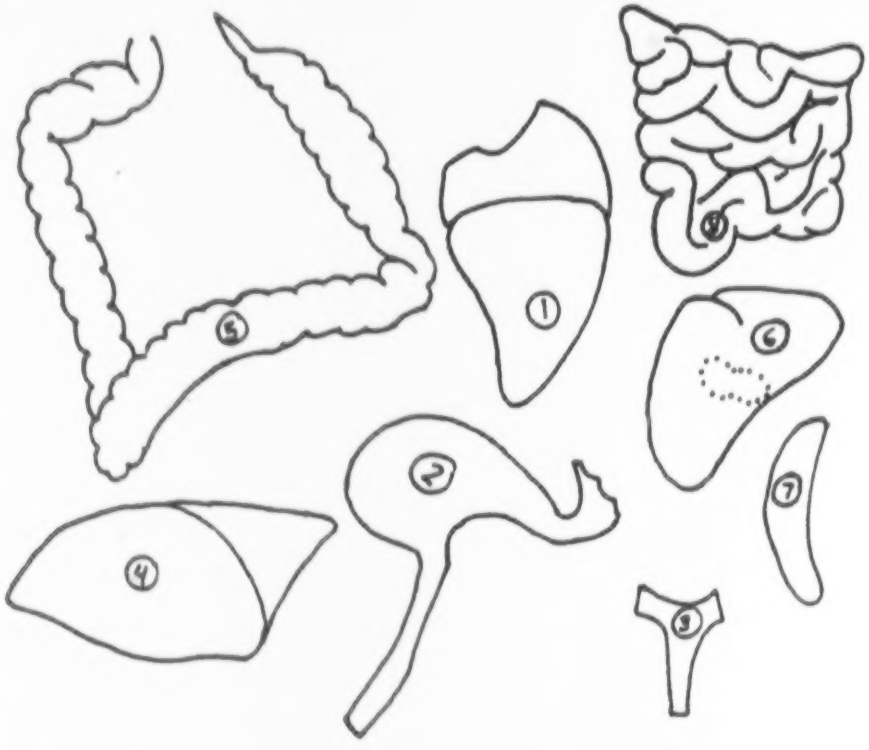


age _____

TEACHER SHEET
FOURTH GRADE - HUMAN BIOLOGY

A system is a group of organs (heart, lungs, liver, etc) that all work together towards one specific function. For example, some of the organs that make up the digestive system is the stomach, pancreas, liver, gallbladder and the small and large intestine. Some of the sytems of the human body include the circulatory, excretory, respiratory and nervous.

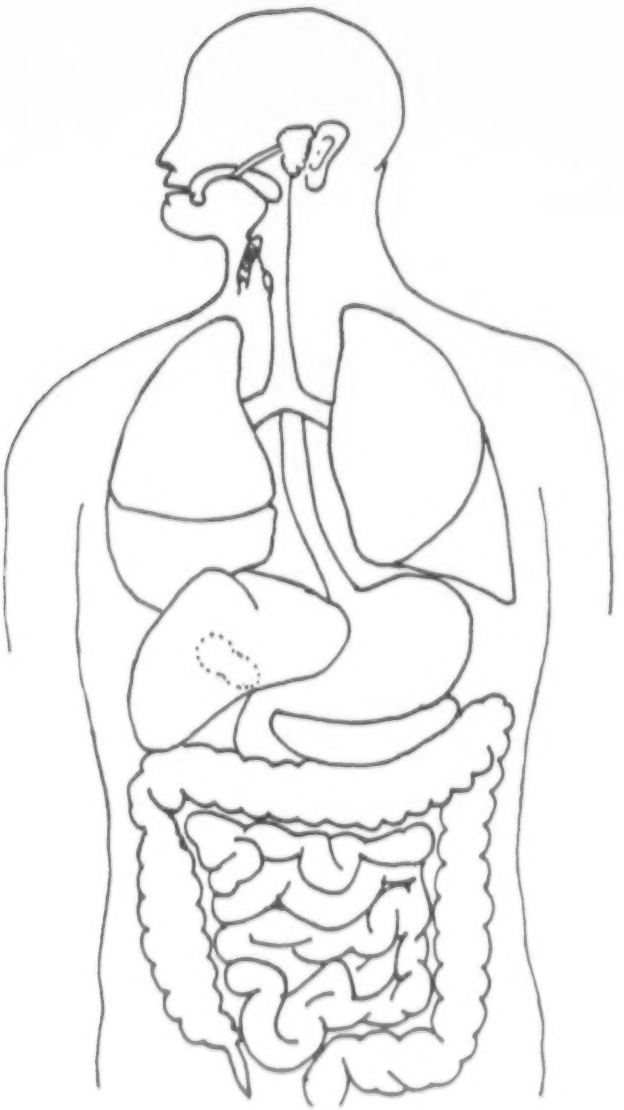
THE DIGESTIVE SYSTEM - The digestive sytem changes food so it can be used by our bodies. The food is first taken in by the mouth and chewed. The food is then swallowed and moves down a tube (the esophagus) into the stomach. Here, the stomach muscles contract and the food is mixed with stomach fluids to further break down the food. Now, the food moves from the stomach to the small intestine. It is from here that vitamins and digested food pass into the blood and throughout the body. Water is passed into the blood through the large intestine.



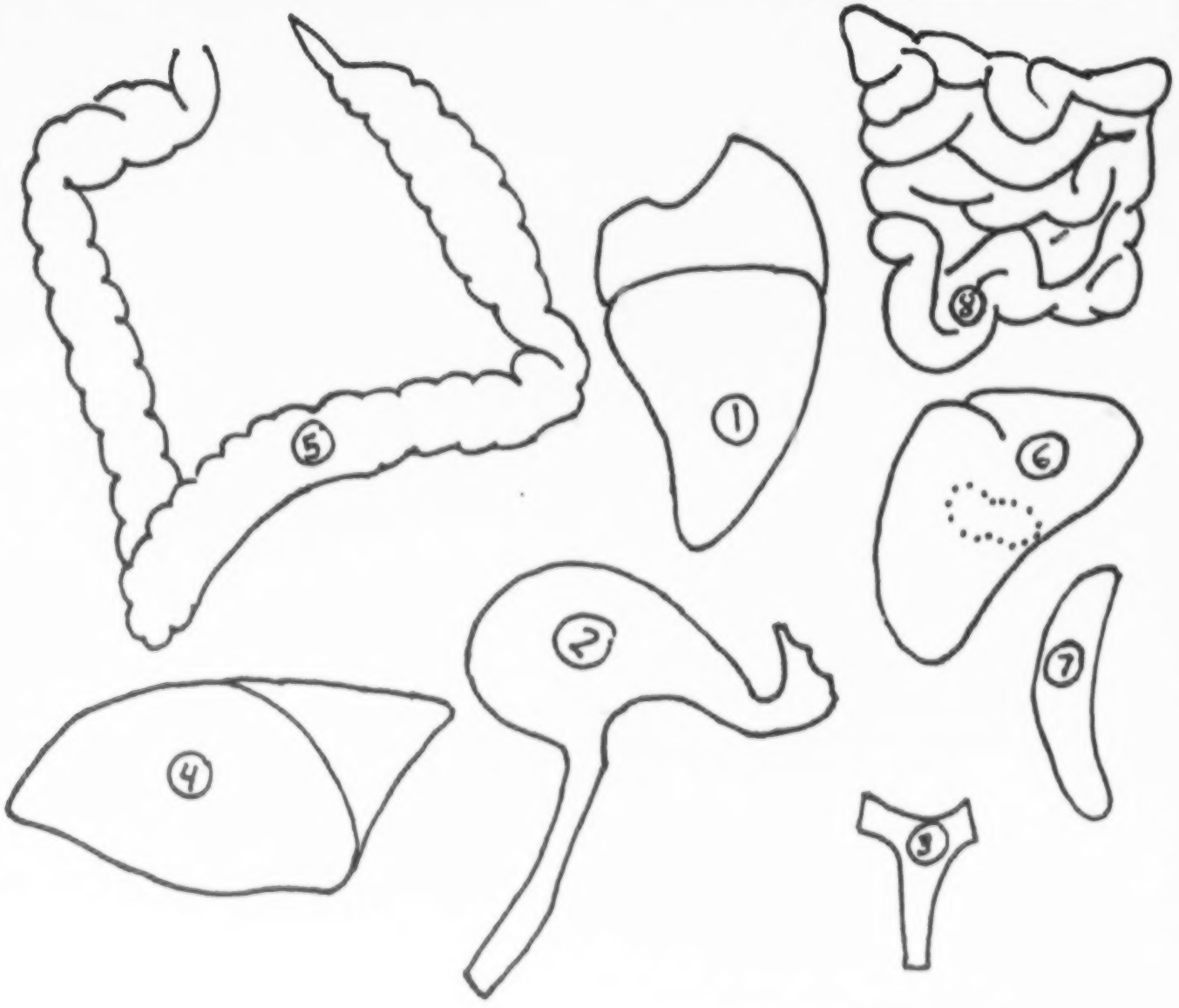
The organs of the digestive system :

number of organ	organ name
1	right lung
2	stomach
3	bronchus
4	left lung
5	large intestine
6	liver with gallbladder
7	pancreas
8	small intestine

TEACHER SHEET
FOURTH GRADE - HUMAN BIOLOGY



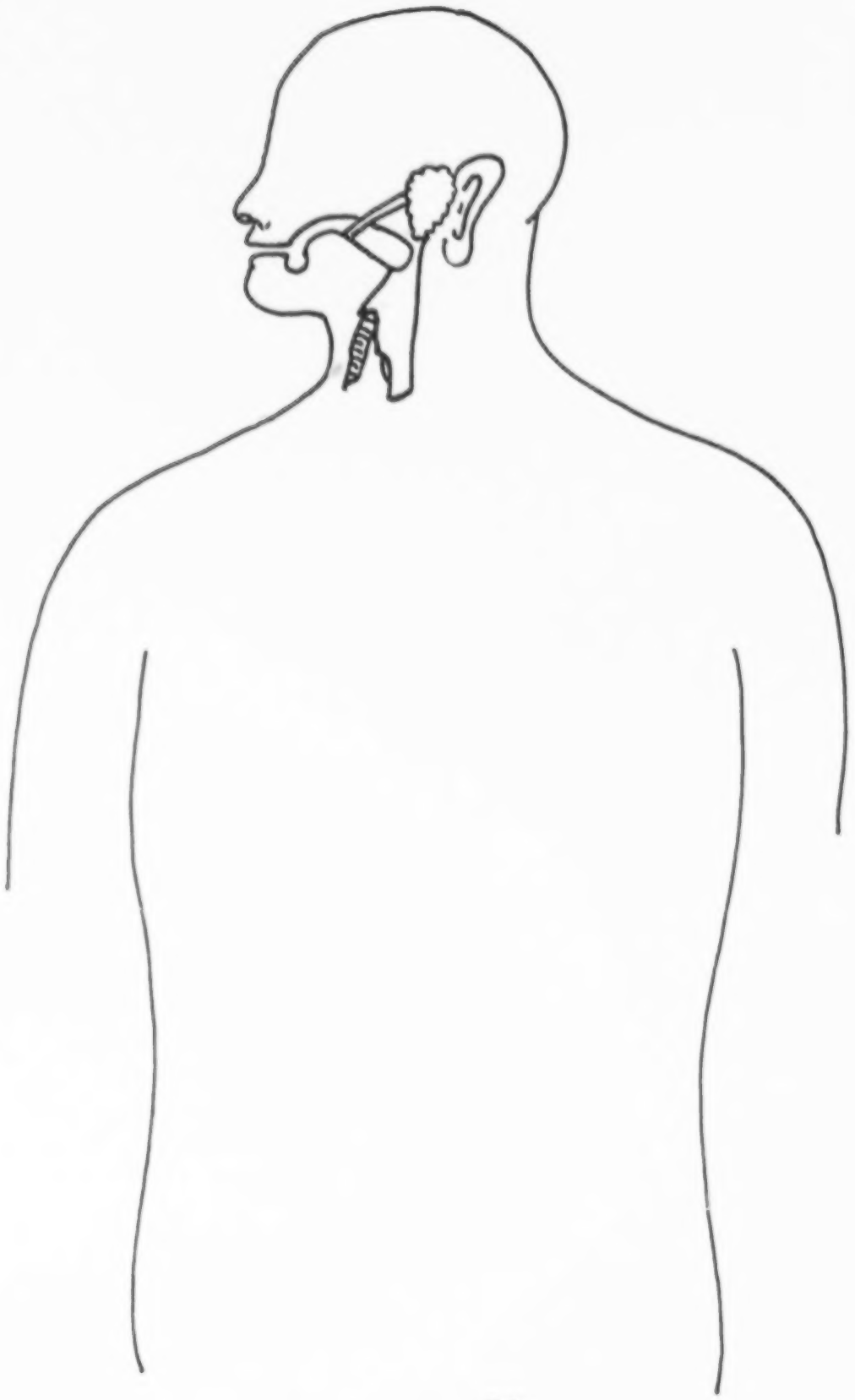
name _____



The organs of the digestive system &

number of organ	organ name
1	
2	
3	
4	
5	
6	
7	
8	

name_____



TEACHER SHEET
FIFTH GRADE - HUMAN BIOLOGY

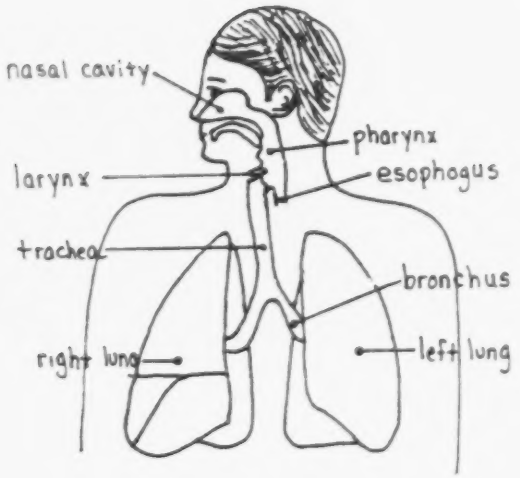
THE RESPIRATORY SYSTEM - It is the respiratory system that enables our body to breathe in oxygen and breathe out carbon dioxide. Without oxygen, we cannot live for more than a few minutes. All the cells in the body use oxygen to aid in the process of converting food into energy.

The process by which we breathe is as follows: Oxygen is taken in through the nose (nasal cavity). From the nose the oxygen enters the pharynx (the throat cavity behind the mouth). From there the oxygen passes through the voice box or larynx and then into the windpipe or trachea. The trachea becomes divided at the lower end into two tubes, called bronchi (bronchus - singular). Each bronchus enters a lung (left and right). Tiny air sacs in the lungs hold the air for a brief period until it is diffused into the blood through capillaries. Blood returning to the heart carries carbon dioxide which leaves the blood stream by diffusing into the air sacs which is then exhaled out by the lungs.

Name _____

Using the words in the diagram, explain how the respiratory system functions or works.

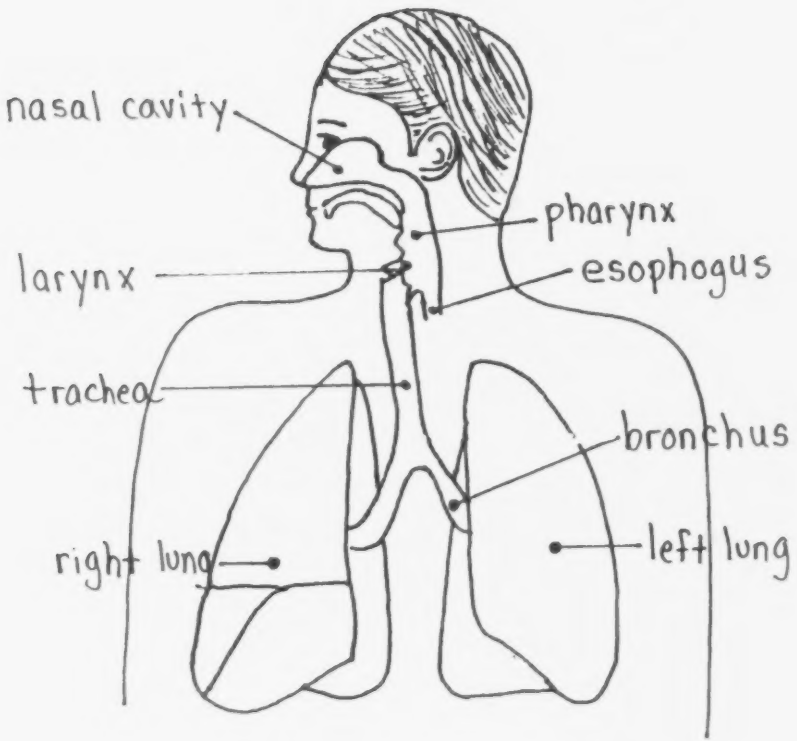
THE



RESPIRATORY SYSTEM

Name _____

THE



RESPIRATORY SYSTEM

Using the words in the diagram, explain how the respiratory system functions or works.

BEST COPY AVAILABLE

TEACHER SHEET
SIXTH GRADE - HUMAN BIOLOGY

A disease is the abnormal functioning of the body that prevents the body organs from working as they should. There are many causes of disease. Disease can be caused by fungi (ie. athlete's foot), bacteria (ie. tuberculosis), viruses (ie. common cold) and protozoans (amoebic dysentery). Not all types of fungi, bacteria, viruses and protozoans are disease-causing agents. The causes of disease are sometimes referred to as germs. The definition of the term germ is sometimes ambigious. Germs can be carried through food, water, air, animals, and people.

It is highly common to get germs on our hands and transmit them to things we come into contact with. There are ways to decrease the number of germs on our hands or other external areas of the body and that is through washing with soap and water. The skin needs to be kept clean in order to remain healthy.

What Causes Disease?

Certain bacteria, viruses and protozoans are responsible for many human diseases. Below is a description of one disease-causing agent from each of the three groups and the name of a disease they may cause in humans. Using the characteristics given, draw the disease-causing agent in the space provided.

1 Bacteria (Streptococcus) Causes Strep throat Small spherical bodies called cocci lined up side by-side forming chains that are 'S'-shaped	
2 Virus (Rhinovirus) Causes Common cold spherical bodies with smaller spherical bodies within them in a random arrangement	
3 Protozoan (Entamoeba) causes dysentery Shapeless blobs with cell walls that keep them held together	

Name_____

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2 Virus (Rhinovirus) causes common cold spherical bodies with smaller spherical bodies within them in a random arrangement	

3 Protozoan (Entamoeba) causes dysentery shapeless blobs with cell walls that keep them held together	